



# **Determinants of B2B E-purchasing adoption by SMEs**

By

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Master Dissertation in Marketing

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## **Bibliographical note**

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## **Abstract**

**Purpose** – The purpose of this dissertation is to identify the B2B e-purchasing usage determinants of Portuguese small and medium sized enterprises (SMEs) in their supply chains. It is intended to be an academic contribution to a field that has not been as widely studied as e-commerce and also provide relevant information to supplier companies who want to push their online sales channels more successfully.

**Research design/ Methodology** – For this exploratory study, a conceptual Technology Organizational Environment (TOE) framework was designed. Data was collected through an online questionnaire addressed to Portuguese companies that was sent by email and by Facebook and LinkedIn messages, using a convenience sample. The questionnaire consists mainly of yes/no questions and 5 point Likert scales questions. Hypotheses were tested using the Spearman's Rho rank correlation.

**Findings** – Technological, organizational and environmental factors have relevant relationships with the online purchasing frequency of SMEs. The factors that display stronger relationships are associated to the willingness to purchase online, perceived benefits, perceived costs, top management support and pressure from trading partners through suggestions, attribution of special benefits and the demand to use their online sales channel.

**Research contribution** – The results obtained from the exploratory study represent a step forward in this field, not only academically but also for business purposes. The study not only validated some determinants used by other authors, mainly in e-commerce studies by bringing them to the e-purchasing/e-procurement field, but also validated and highlighted the relevance of determinants that had not yet been extensively found in the literature, demonstrating the utmost relevance of relationships between buyer and supplier as well as of perceived costs.

## **Keywords**

E-purchasing; E-procurement; E-commerce; E-business; SMEs; TOE framework; Business to business commerce;

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# I. Introduction

## 1.1. Context

The internet has been changing the way companies compete. It creates new opportunities and forces the most traditional operating companies to change their processes (Hitt, Ireland, Camp & Sexton, 2001).

Small and medium enterprises (SMEs) are a significant part of many countries' economies (Sila & Dobni, 2012) and by embracing the change brought on by the internet and e-commerce applications they may achieve productivity gains (Sila & Dobni, 2012).

However, for various reasons, SMEs are continuously reported to be slow to incorporate e-commerce applications into their current business models (Simpson & Docherty, 2004). That picture may however have begun to change.

There is a wide range of business suppliers which have online sales channels. Since buyers use multiple channels of a company for searching, browsing and purchasing (Van Dijk, Minocha & Laing, 2006), many suppliers are adopting e-channels in addition to the ones through which they usually used to operate (Rowley, 2002). Moreover, a combination of channels can exploit each channel's advantages to overcome the deficiencies of others (Zhang, Farris, Kushwaha, Irvin, Steenburgh & Weitz, 2009).

Neglecting the internet's potential benefits for conducting business would not be beneficial nor for SME's (which are in great number worldwide) nor for suppliers investing on web business platforms. For these reasons, understanding the factors that influence the incorporation of the e-business aspects in the SMEs' operations is very important for suppliers. Suppliers may then be able to define and execute strategies to push their online channels effectively to this peculiar mass of enterprises whose needs and limitations probably differ so much from those of large ones.

In comparison to other industrialized economies, Portugal is regarded as a poor performing country. The country's economic structure is based on SME's and there are few publications on the subject of this thesis.

## **1.2. Purpose and relevance of the study**

The purpose of this thesis is to identify the B2B e-purchasing usage determinants of Portuguese small and medium sized enterprises (SMEs) in their supply chains. Thus it is intended to provide a starting point for supplier companies to craft and implement strategies to push their e-channels successfully to SME's.

The contextual factors that determine usage are studied in order to determine which ones more intensely affect the use of online purchasing by Portuguese SMEs. The technology-organization-environment framework (TOE) is used and special attention is given to factors pertaining B2B relationships.

A questionnaire based on the TOE framework was applied to a sample of Portuguese SME's. Statistical methods were used to address the importance of each of the TOE framework factors.

## **1.3. Chapter summary**

Chapter 1 consists of an approach to the relevance, purpose and objectives of this study. In chapter 2, a literature review is done, setting a theoretical framework through reviewing e-business concepts, business-to-business dynamics, information technology usage by SMEs and technology adoption models. It also portrays the Portuguese SMEs IT usage. Chapter 3 approaches the objectives and the methodology chosen to conduct the investigation. The methodology is defined and explained based on the theoretical framework which will then conduct to the data analysis and results portrayed in Chapter 4. Chapter 4 contains the descriptive statistics and statistical tests, followed by discussions of the obtained results. In Chapter 5, the main conclusions of the study are highlighted and emphasized in relation to the objectives and relevance of this exploratory contribution both to the scientific community as well as for business purposes.



## **II. Theoretical Framework**

Technology has profoundly altered the way companies manage the exchange of information, goods and resources (Chowdhury, 2000). What was once done through the use of electronic data interchange (EDI) later evolved to the use of Internet-based applications (Standifer & Wall, 2010).

Since business involves interaction through different sets of mediums and one of those is internet technology, in this chapter, a review of the e-business literature is done. The review is focused on e-commerce and e-procurement/e-purchasing. An analysis of the business-to-business e-commerce relationships is done, followed by a brief overview of the technology adoption models and frameworks. Finally, a portrait of the e-business related aspects of Portuguese SMEs is done, setting the case for the development of this study.

### **2.1. E-Strategy**

Whether implicitly or explicitly, strategy is of utmost importance for any company regardless of its dimension and operating market (Goncalves, Gomes, Martins & Marques, 2014). It is a controlled and conscious formal dynamic process of interaction between a company and its environment which results in the dynamic change of the company's internal aspects (Ansoff, 1979).

The decision to embrace B2B e-commerce is strategic and it can vary in its risk and cost to an organization (Standifer & Wall, 2010).

In spite of the fact that trading through e-marketplaces is almost unavoidable in business-to-business (B2B) commerce, many companies still struggle in the development of both short and long-term strategies for e- purchasing (Chang, Easley & Shaw, 2009).

## **2.2. E-business**

E-business is defined as the use of the internet to conduct or support business activities through the value chain (Porter, 2001). Its scope of activities may occur within one company or between companies (Rayport & Jaworski 2001). E-business involves marketing, sales, customer service, e-learning, procurement, coordination, and internal operations (Zhu & Kraemer, 2005; Turban, King, Viehland & Lee, 2006).

A key element for e-business to happen is the access of companies to technology and furthermore their integration capability (Turban et al., 2006; Martins & Oliveira, 2009). There are two forms of technology integration: internal (inside a company) and external (company with their business partners (Turban et al, 2006). E-procurement systems which enable trading to be carried online are an example of the external integration.

In sum, E-business can be regarded as a broader definition of e-commerce (Turban et al., 2006).

## **2.3. E-commerce**

E-commerce is defined as any type of purchase or sale of products and/or services to a company via internet (Solaymani, Sohaili & Yazdinejad, 2012). Other authors such as Napier (2006) regard e-commerce as the use of any technology such as telephone to conduct business.

From a company's point of view, one of the advantages of the adoption of e-commerce is the easy collection of information regarding products being bought or sold and also regarding competitors (Turban et al., 2006). However, there are also risks such as the ability consumers have to share and amplify their unpleasant experiences with a company which posits a threat to the brand equity and reputation of a company (Ferreira, H., 2014).

E-commerce can be characterized according to the type of market as well as trading relationship among participants (Turban et al., 2006).

### 2.3.1. Classification by nature of interaction and transaction

Bellow, a brief description of e-commerce by nature of interaction and transaction is made, following the structure presented by Ferreira (2014). This is relevant for the further analysis of e-procurement formats.

**Table 1 - E-commerce by nature of interaction and transaction**

<u>Business-to-Business</u>	Trading occurs between two companies. When transactions use electronic platforms it is called business-to-business e-commerce (Claycomb, Iyer & Germain, 2005). Electronic transactions can have advantages such as facilitating efficiency, enhancing capacity, and speed of exchange (Standifer & Wall, 2010).
<u>Business-to-Consumer</u>	When selling and purchasing of goods and/or service occurs between a company and the final consumer (Carvalho, 2008). Business-to-consumer e-commerce occurs when these transactions take place using electronic platforms.
<u>Consumer-to-Consumer (C2C)</u>	Transactions between consumers. If it takes place online it may be called C2C e-commerce (Ferreira, 2014). <i>Olx</i> or <i>Craig's List</i> are examples of these kinds of platforms.
<u>Mobile Commerce</u>	Business-to-business and business-to-consumer transactions through data exchange via mobile data operating devices (Ferreira, 2014).
<u>E-government</u>	Digital transactions from a governmental entity to a company (government-to-business G2B) or to a citizen (government-to-citizen G2C) (Turban et al., 2006) and vice versa.

### 2.3.2. Business models and adoption models of e-commerce

Business models determine the way business is carried by companies. They are a reflection of a company's strategy in order to provide benefits for itself (Costa, 2010). The main e-business models are exposed bellow following the structure of Ferreira's (2014) work:

**Table 2 – Business models and adoption models of e-commerce**

<u>Online direct sales</u>	This model eliminates any possible intermediary and connects producers and consumers directly through an online platform owned by the producer (Turban et al., 2006).
<u>Name your own price</u>	Based on a process in which the seller sets the price he is willing to pay for a product and the seller sets the minimum price he is willing to accept. If the value offered by the seller matches or exceeds this value, the transaction takes place. Otherwise, the buyer may make new offers until there is at least a match (Hinz, Hann & Spann, 2011).
<u>Find the best price</u>	The consumer exposes his needs to an intermediary company which then seeks the supplier which may best fit those needs. Then, the client is given a timeframe through which he must make a decision of whether or not to buy (Turban et al., 2006).
<u>Online auctions</u>	This model allows participants to bid for products and services from anywhere as long as he has access to the internet (Yong, Yu-Kai & Kwok-Leung, 2013).
<u>Product and service customization</u>	The consumer is allowed to customize the product or service to best fit his needs (Turban et al., 2006).
<u>Electronic marketplaces</u>	E-marketplaces are virtual market places that connect buyers and sellers working solely as intermediaries such as Olx and Craig's list (Matook, 2013).
<u>Membership</u>	This model is popular in the offline world. It has gained popularity also in the online world and consists of giving discount opportunities exclusively to members of a certain virtual community (Ransbotham & Kane, 2011).

### **2.3.3. Barriers to e-commerce**

There are several barriers to the use of e-commerce such as data security and management, implementation costs to companies and discomfort of the consumers in using e-commerce platforms (Heung, 2003). There may also be high hiring costs for a specialized workforce with know-how (Turban et al., 2006).

On a B2B perspective, the products a company offers, the market conditions it faces, and the purchase patterns it implements determine the selection of B2B e-Commerce scenario with the greatest potential buyer benefit (Chang et al., 2009).

## **2.4. E-procurement**

### **2.4.1. E-procurement and e-purchasing**

The purchasing plays an important role in the strategy of the firm (Weele, 2010). Procurement has become a key element in the value chain as it has the potential to improve a firm's competitive performance (Corina, 2011).

Despite different or even confusing approaches in the literature, procurement and purchasing are sometimes regarded as different terms to define the same activity. Procurement regards *“The activities associated with acquiring products or services. The range of activities can vary widely between organizations to include all of parts of the functions of procurement planning, purchasing, inventory control, traffic, receiving, incoming inspection, and salvage operations.”* (Csmg, 2013, p154) Purchasing is a synonym of procurement (Csmg, 2013).

The definitions of e-procurement and e-purchasing are not unanimous as different author's portrait e-procurement and e-purchasing in different ways. Some view e-procurement as a whole process: “E-procurement includes web technology-based purchasing solutions aimed at simplifying commercial transactions within and between organizations and information technology solutions for ordering, logistics and handling systems as well as for payment systems” (Weele, 2010), “e-procurement is a series of steps – from the formulation of the purchasing corporate strategy to the actual implementation of an Internet-based purchasing system” (Morris & Stahl, 2000, p15). Others have simpler or more task oriented views: as “using Internet technology in the purchasing process” (Boer, Harink & Heijboer, 2002, p120).

For the purpose of this thesis e-purchasing and e-procurement were regarded as synonyms of the act of buying online (using the internet and excluding manually typed emails).

E-procurement has benefited from technological innovation and is expected to continue improving efficiency and productivity as numerous applications are available in the market (Corina, 2011).

In Singapore, factors such as firm size, top management support, perceived indirect benefits and business partner influence have been pointed as strongly associated with the adoption of e-procurement by enterprises. The study which presented these results also shows that industry type is not related to e-procurement adoption (Thompson, Lin & Lai, 2009).

### 2.4.2. E-procurement forms

There are numerous E-procurement models or forms (Corina, 2011). Bellow, some will be described based on the work of (Boer et al., 2002):

**Table 3- E-procurement forms**

<u>E-ordering</u>	The process of creating, approving purchasing requisitions, placing orders and receiving the goods and services. This process is done using a software system based on internet technology. For the ordering of the items, an E-catalog is used. The goods and services ordered are indirect goods and services for the firm's activity (non-product related).
<u>Web-based ERP (Enterprise Resource Planning)</u>	Similar to the E-ordering but it is used to define the process of acquiring product related goods and services.
<u>E-sourcing</u>	The use of internet technology for identifying new suppliers in specific categories according to the purchasing requirements. IT allows for the increase of decision making flexibility and lower prices.
<u>E-tendering</u>	The use of internet technologies to send RFI (request for information) and RFP (request for proposal) to suppliers and then receive their respective response. An e-tendering system is used to analyze the supplier's responses.
<u>E-reverse auction</u>	The use of internet technology to buy goods and services from the supplier that has the lowest price or combination of lowest price and other conditions.
<u>E-informing</u>	The gathering and disseminating of purchasing information between potential buyers and potential suppliers and does not involve transactions.

## **2.5. E-sales channels**

For e-business to materialize, buyers need to access the supplier's e-sales channels.

Many companies are adopting e-channels in addition to the ones through which they now operate (Rowley, 2002). Buyers use multiple channels of a company in searching, browsing and purchasing (Van Dijk, Minocha & Laing, 2006). Many buyers use online channels to search for information before buying in a physical store (Pauwels, Leeflang, Teerling & Huizingh, 2011). This phenomenon is denominated 'web-to-store shopping' (Verhoef, Neslin & Vroomen, 2007).

E-sales channels are therefore very relevant, as companies which use a combination of channels can exploit each channel's advantages to overcome the deficiencies of others (Zhang, Farris, Kushwaha, Irvin, Steenburgh & Weitz, 2009). An online channel may prove itself useful when a buyer wants to make an order and cannot go to a physical store, for example. For sellers, improved financial performance coming from low cost access to new markets, increased customer satisfaction and loyalty and creation of a strategic advantage is expected (Zhang et al., 2009).

The set of activities of selling products or services to consumers using more than one channel is Multichannel retailing (Levy & Weitz, 2009).

From the relevance of e-sales channels for suppliers, the study of the buyers' adoption drivers is of utmost importance. With a supplier on one side and the buyer on the other, the relationship dynamics success through e-channel implementation is worth being looked at in detail. The understanding of these dynamics will allow both parties to set and implement strategies that best fit their business needs in what comes to e-procurement.

## **2.6. Business-to-business e-commerce relationships and dynamics**

### **2.6.1. Power and conflict in the B2B relationship**

“The relational structure of business-to-business (B2B) e-commerce relationships affects perceptions of conflict, power, and success among partners” (Standifer & Wall, 2010, p205). B2B e-commerce relationships are therefore dynamic and structured. Perceived power and conflict are variables that determine success and satisfaction among parties, helping B2B e-commerce managers in their influencing strategies (Standifer & Wall, 2010).

In the course of relational interaction, power is the extent to which one party carries out its wishes with no resistance from the other (Pfeffer, 1981). In inter-organizational relationships power is tied to their degree of interdependency (Bacharach & Lawler, 1980). For example, a B2B e-commerce manager of a big powerful organization might maintain power advantage by establishing partnerships with smaller companies (Standifer & Wall, 2010).

Conflict is defined as a social process between individuals, groups, or larger entities. In this process, one party perceives its interests are being opposed or affected by the other party (Wall & Callister, 1995). The level of conflict is affected by the comparative power level (Standifer & Wall, 2010). Perceived power differences tend to reduce the level of conflict (Smith, Carroll & Ashford, 1995) as generally, the lowest power party gives in to the stronger party’s demands without overt conflict (Hayward & Boeker, 1998). In inter-organizational relationships these same principles apply, determining each party’s actions toward the other (Standifer & Wall, 2010).

One of the forms in which conflict can emerge in the B2B e-commerce context is at the process level. Process conflict occurs when there is lack of agreement in the selection of courses of action, resource assignment as well as duty or responsibility distribution (Jehn, Northcraft & Neale, 1999). Due to the nature of the e-commerce environment (fast paced, complex, cross boundaries, cost and returns at stake) process-oriented conflict is inevitable among B2B e-commerce partners (Standifer & Wall, 2010).

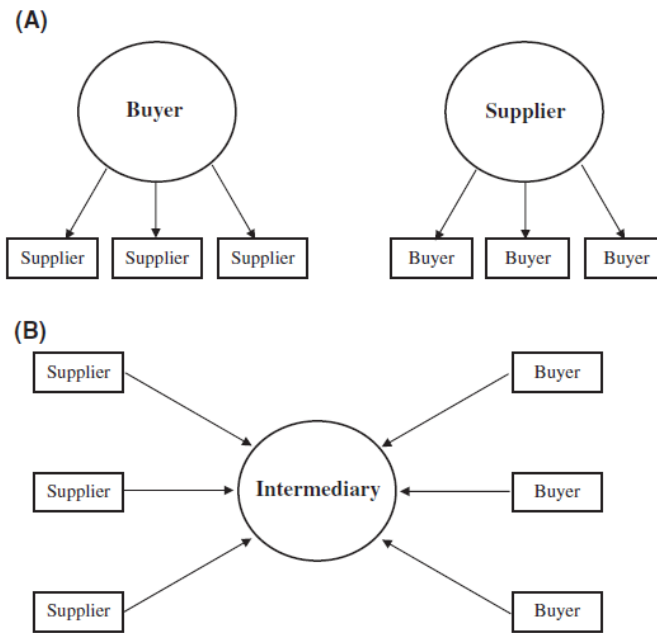
The type of relational structure affects power perceptions and conflict between parties.



### 2.6.2. B2B e-commerce relational structures

Regarding the nature of the relationships, the B2B e-commerce relational structures are divided in two categories (Standifer & Wall, 2010):

- buyer/supplier-oriented relationship structures;
- community-oriented relationship structures;



**Fig. 1 - B2B e-commerce relational structure**

(Standifer & Wall, 2010).

Buyer/supplier-oriented structures, as depicted in picture A, create or sustain a particular buying/selling relationship and may consist of an arrangement between a buyer and a set of suppliers. In the supplier-oriented relationships, the supplier creates a system of targeted customers. These structures have one-to-one nature (Standifer & Wall, 2010).

Another type of relationship structure is the “community-oriented relationship”, as depicted in Figure 1B, comprehending possible groupings of buyers, suppliers, and may also involve a third party (Standifer & Wall, 2010).

Depending on the B2B-EC structure they operate in, employees tend to perceive different levels of process conflict. In community-oriented structures, employees tend to perceive a higher degree of process conflict and organizational power compared to buyer/supplier structures. However, employees in buyer/supplier-oriented B2B e-commerce relationships perceive their relationships to be more successful than on community-oriented types (Standifer & Wall, 2010).

In the B2B e-environment, these structured relationships are interfaced by technology. For this reason, the nature of the interactions and its positive or negative results depend largely on the buying party willingness to accept these technological platforms as a means to purchase from the seller. IT adoption becomes then an issue to address and investigate.

## **2.7. Technology diffusion and adoption**

### **2.7.1. Theories and frameworks**

In the IT literature, one finds several studies which explore factors affecting IT adoption (Sila & Dobni, 2012). The most often used IT adoption theory is Innovation Diffusion Theory. Other theories such as Information Richness Theory and Theory of Communicative Action Structuration are also used (Lewis, Bajwa & Pervan, 2004). Regarding technology adoption models, one finds models such as the Technology acceptance model (TAM). Another tool that has been used in several studies over the last few years is the Technology Organization-Environment (TOE) framework. This is a framework and not a theory per se (Tornatzky & Fleischer 1990).

The TOE framework includes the technological context, the organizational context and the environmental context in which companies operate (Sila & Dobni, 2012). This framework is consistent with Rogers’ (1983) Innovation Diffusion Theory (Zhu, Kraemer & Xu, 2003). Innovation Diffusion Theory uses three other categories of

innovation adoption factors besides technological factors: leader characteristics, internal characteristics of the organization and external characteristics of the organization (Zhu et al., 2003).

Table 4 lists some of the most popular technology adoption models in the literature.

**Table 4 - Technology adoption models**

adapted from Santos (2013) and Ferreira (2014).

Technology adoption models		Author
TRA	Theory of Reason Action	Fishbein & Ajzen (1975)
SCT	Social Cognitive Theory	Bandura (1986)
TAM	Technology Acceptance Model	Davis (1989)
TOE	Technology, Organization, Environment framework	Tornatzky & Fleischer (1990)
TPB	Theory of Planned Behavior	Ajzen (1991)
IDT	Innovation Diffusion Theory	Rogers (2010)

### 2.7.2. The Technology Organization Environment Framework

As stated previously, the TOE is a framework and not a theory. It is an approach to the process by which firms adopt and implement and use technological innovations. It analyses the technological context, the organizational context, and the environmental context, presenting “*both constraints and opportunities for technological innovation*” (Banerjee & Ma, 2012; Tornatzky & Fleischer, 1990, p154).

To study e-business, a theoretical model accounting for the usage factors is needed. The TOE framework roots these factors in technological, organizational and environmental contexts an organization is in. According to literature review, the TOE framework (Tornatzky & Fleischer, 1990) is useful for the study of e-business use (Zhu & Kraemer, 2005).

The three contexts regarded in this framework are explained bellow.

i. Technological context

This context depicts both the existing technologies in use by a company as well as new technologies relevant to it (Zhu & Kraemer, 2005).

Typically, technology consists of hardware and software. Hardware is the physical aspect of informatics systems such as printers and monitors. Software is the information basis such operating systems and applications that run through the hardware (Rogers, 2010).

Technology integration may be internal (within the company) and external (with business partners). E-procurement and e-purchasing systems are examples of external technology integration (Turban et al., 2006). Technology availability and integration capacity are aspects to be taken into account when studying its use by companies (Martins & Oliveira, 2009).

ii. Organizational context

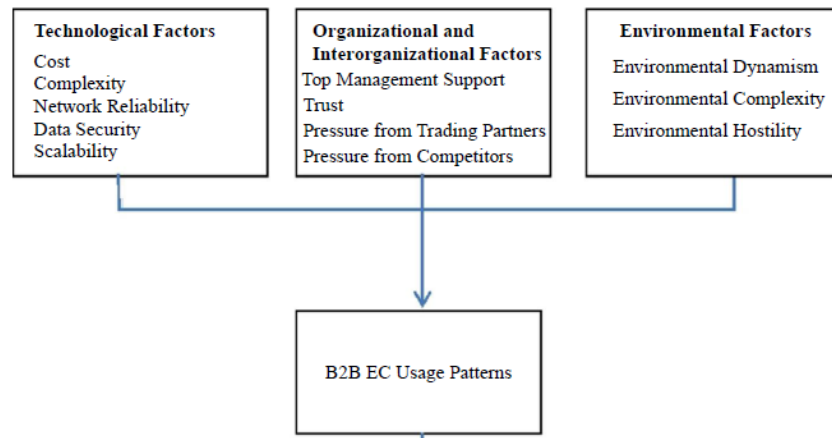
The organizational context describes measures of an organization such as scope, size and slack of internally available slack resources (Zhu & Kraemer, 2005).

The size of a company is pointed in the literature as an important factor affecting innovation adoption. While some authors found that the bigger the company the more it adopts e-commerce like Deltoro et al. (2012), others like Zhu, Kraemer & Xu (2006) found that bigger companies have a greater difficulty in absorbing these technologies.

iii. Environmental context

The environmental context encompasses the business arena of a company, namely, its industry, competitors, and interaction with government (Tornatzky and Fleischer 1990, pp. 152–154). It can be divided in two aspects: competitive pressure (from industry sector and rivals) and regulatory framework (government) (Zhu et al., 2006).

Sila & Dobni (2012) have applied the TOE framework to study the Patterns of B2B e-commerce usage in SMEs. As an example, bellow is exposed the TOE framework these authors have designed.



**Fig. 2 - Example of the TOE framework applied in an e-commerce**

study by Sila & Dobni (2012) (excerpt).

In order to design and apply the TOE framework to study Portuguese SME's e-purchasing determinants, the current situation of these companies' e-business habits must be portrayed.

## **2.8. IT use and e-business adoption by Portuguese SMEs**

### **2.8.1. SMEs relevance and classification**

SMEs play a very important role in a country's economy. They significantly contribute to the GDP and employment (Gonçalves et al., 2014). Therefore, they are big source of economic growth, both at the national, regional and local levels (Taylor & Murphy, 2004). These companies can benefit from the potentialities of e-business (Gonçalves et al., 2014).

However, many researchers point to the fact that SMEs are lagging in the adoption of e-business applications in their business models. The opportunities and problems encountered by small businesses in the e-commerce spectrum are reported to be a worldwide phenomenon (Martins & Oliveira, 2009).

The current state of E-procurement in SMEs has been studied very little, yet SMEs play an important role in the global economy and in supply chains (Gunasekaran, McGaughey, Ngai & Rai, 2009).

The European Commission (CEC, 2003) classifies SMEs according both to their employee numbers and turnover or balance sheet:

**Table 5 – Classification criteria of SMEs**

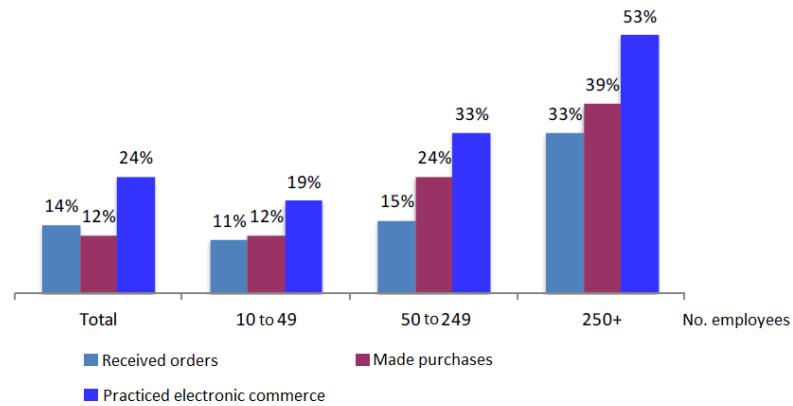
according to the EU, in CEC (2003).

Company Category	Number of employees	Turnover	or	Balance sheet total
Medium	< 250	≤ € 50 m		≤ € 43 m
Small	< 50	≤ € 10 m		≤ € 10 m
Micro	< 10	≤ € 2 m		≤ € 2 m

### 2.8.2. SMEs IT usage in Portugal

In Portugal, at least until 2010, B2B e-commerce was the most expressive area of e-commerce with the highest turnover. Business-to-consumer had also had a significant growth rate as more consumers have access to technology and lean towards this kind of transactions (IDC e ACEPI, 2010 apud Ferreira, 2014).

The 2013 use of e-business related activities by Portuguese companies (excluding micro companies and financial services companies) is portrayed bellow (IUTICE, 2014):

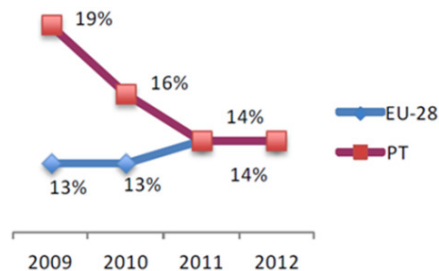


**Fig. 3 - Percentage of Portuguese enterprises with 10 or more employees that did electronic commerce in 2013.**

Adapted from IUTICE (2014).

The use of e-commerce increases as the size of the company grows. This is consistent with Almeida Alves (2006) statement that Portuguese companies' use of IT tends to be more intense as the size of the company increases.

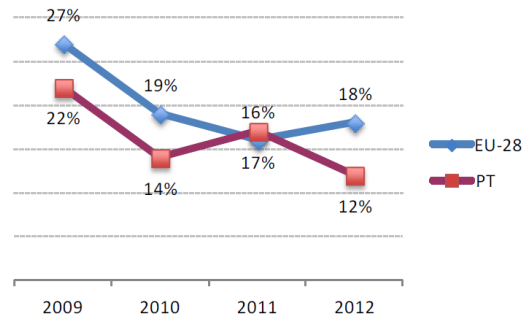
Looking at the evolution of claimed received orders through electronic commerce in the same universe of enterprises compared to the EU reality one finds that Portugal is aligned with the EU-28 countries:



**Fig. 4 - Percentage of Portuguese enterprises with 10 or more employees that claimed to have received orders through electronic commerce vs EU-28.**

Adapted from IUTICE (2014).

Focusing on electronic purchasing applied to the same universe of Portuguese enterprises the data shows the following results:



**Fig. 5 - Percentage of Portuguese enterprises with 10 or more employees that claimed to have made purchases through electronic commerce vs EU-28.**

Adapted from IUTICE (2014).

Contrasting with received orders, there is some instability in the proportion of enterprises who claimed to have purchased online. In this field, the Portuguese reality is behind the EU-28 average (IUTICE, 2014).

In what pertains micro companies (less than 10 employees), data shows that in 2010, 53% of these companies were connected to the internet and only 12% used the internet or other electronic networks to purchase goods or services (SIP, 2010).

The low rate of use of electronic purchasing reflects the resistance to innovate by the demand side (buyers) rather than by the suppliers (supply) (Almeida Alves, 2006).

## 2.9. Chapter summary

This chapter has captured all the essential aspects to frame and develop the study of the B2B e-purchasing usage determinants of Portuguese small and medium sized enterprises (SMEs) in their supply chains.

The literature review provided the understanding of the e-business universe and its relevance in today's and tomorrow's business world. The importance of the B2B relational structures has been described, highlighting power and conflict implications. A



portrait of Portuguese SMEs regarding e-procurement was done, concluding that there is potential for improvement, especially for micro companies.

Since this improvement is strongly related to the technology adoption process by companies, the insights provided by the TOE framework will be useful to ascertain what influences these companies to adopt e-purchasing habits.

This information will be highly useful to suppliers who sell and want to sell more online.

# III. Objectives and Methodology

## 3.1. Objectives

The main objective of this study is to identify the main B2B e-purchasing usage determinants of SMEs. It is intended to identify which factors are related to a higher frequency of online purchasing and thus provide companies which sell online to other businesses with guidelines on how to successfully push their online channel.

## 3.2. Methodology

From the literature review, some studies emerged as interesting starting points to build the framework to be applied in this study and furthermore to the development of the questionnaire derived from the same framework.

Hence, a TOE framework was designed based on:

- the academic work of several authors;
- input from e-commerce and procurement experts;
- the thesis' author's B2B professional experience in sales.

After the items to be measured were chosen and placed under each of the TOE factors, a questionnaire was designed to best evaluate each item's impact on the use of e-purchasing.

This is a quantitative approach as the questionnaire will consist of several questions. Some of the questions are two-step questions regarding each item, the first being a yes/no question and the second a 5 point Likert scale question in order to deepen the knowledge unveiled by the 1<sup>st</sup> question. The choice for Likert scale type questions to measure intensity after a Yes/No question was intended to deepen the knowledge for those variables as Yes/No may be limitative in information output.

In addition to the questions directly associated to the TOE model, others were also added to the study in order to deepen the knowledge of aspects such as the types of products bought through the internet for example.

Initially, the idea was for every question to fit the two step “model” in order to systematize the further statistical analysis. However, through the design of the questionnaire, it became clear that a two-step approach would not make sense for some of the questions and that would be forcing a methodology over the search for knowledge. Besides, the flexibility of the TOE framework (by not being a theory per se) allows for author judgement and input.

The methodology for the questionnaire’s design was the drafting of a first version followed by a pre-test.

### **3.3. Investigation questions**

The aim of this study is to answer these main investigation questions from which each hypothesis derives:

- How and what do **technological** factors contribute to e-purchasing by Portuguese SMEs? Which ones are more relevant?
- How and what **organizational** factors contribute to e-purchasing by Portuguese SMEs? Which ones are more relevant?
- How and what **environmental** factors contribute to e-purchasing by Portuguese SMEs? Which ones are more relevant?

### **3.4. TOE framework and questionnaire variables**

One of the studies that emerged as an interesting and well-structured starting point to build a framework and a questionnaire for this thesis was the one from Martins & Oliveira (2009). The reality portrayed and ascertained in that article is e-commerce which is different from the reality of this work which is e-purchasing. However, several parallelisms may be drawn. Another study equally interesting was the one from Sila &

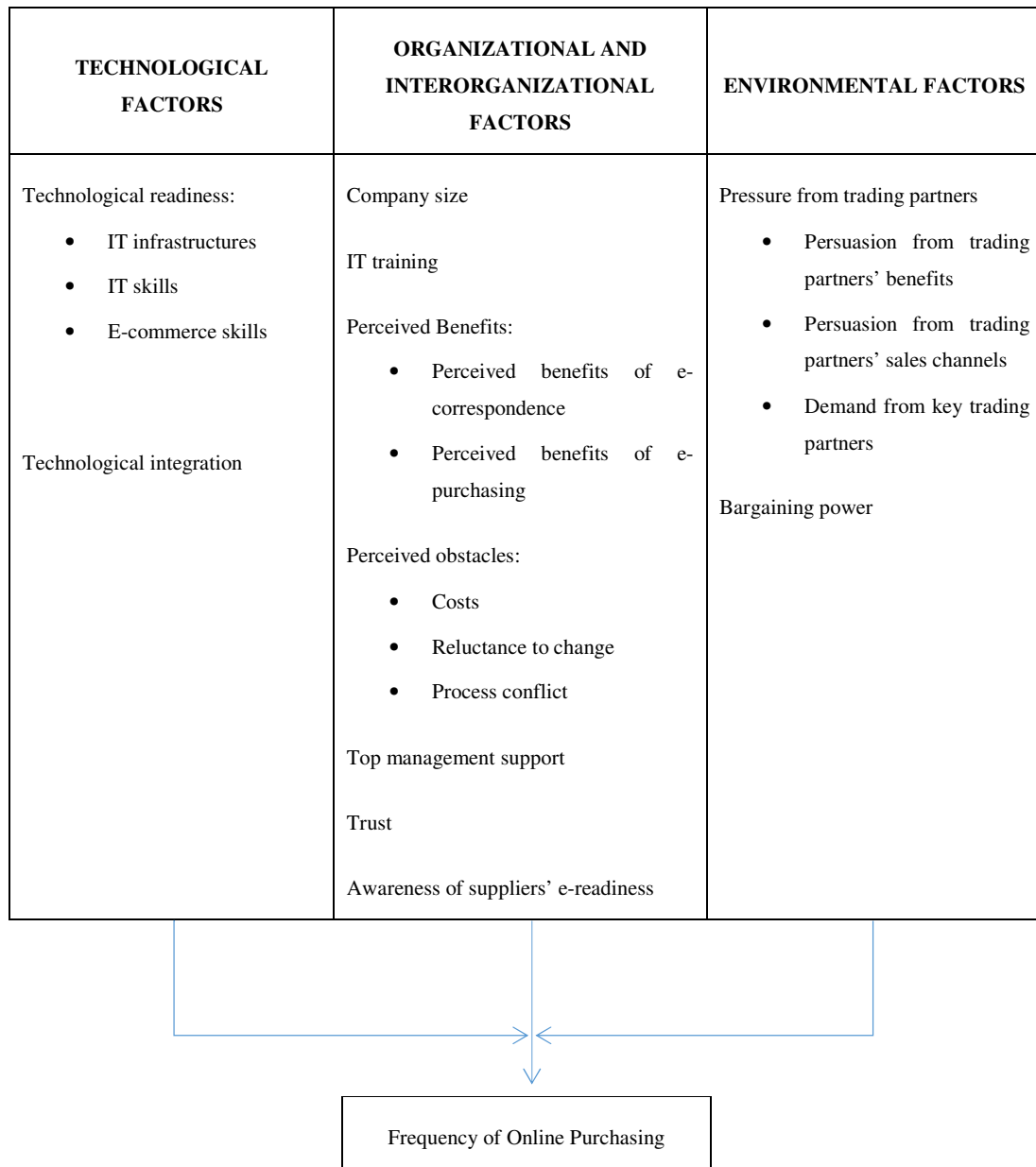
Dobni (2012) specifically for the design of the TOE framework (the questionnaire is not presented by the authors). Other authors' perspectives such as Thompson et al (2009) have also proved useful.

#### **3.4.1. Designed TOE framework**

A TOE framework was developed based on inputs from the works of authors, the opinions of specialists in the field and the thesis author's professional experience in promoting the online sales channel of a big multinational company to SMEs in a B2B environment.

The works mentioned are the ones by Gunasekaran, et al (2009), Martins & Oliveira (2009), Sila & Dobni (2012), Standifer & Wall (2010) and Thompson et al (2009).

The resulting conceptual framework is portrayed in Figure 6. Under the TOE framework a detailed explanation of its design is made.



**Fig. 6 - Conceptual TOE framework**

Source: own elaboration.

All the factors listed in the TOE framework were individually tested as independent variables against a dependent variable defined as “Frequency of Online Purchasing”.

i. TOE categories

The interorganizational factors were added to the organizational factors. That is in accordance with the work of Sila & Dobni (2012) who point that *“the TOE framework does not contain interorganizational factors such as trust a trading partner readiness”* (Sila & Dobni, 2012).

Selection and distribution of factors under each TOE category:

**Table 6 – Techonological factors and reasons for their choice.**

TECHNOLOGICAL FACTORS	Relevant sources for choice
<p>Technological readiness</p> <ul style="list-style-type: none"> <li>• IT infrastructures</li> <li>• IT skills</li> <li>• E-commerce skills</li> </ul>	<p>Technological readiness is a factor explicitly used in the work of Martins &amp; Oliveira (2009) with the sub-constructs “IT infraestructrures” and “IT skills”. The questions have been adapted to fit a questionnaire on e-purchasing.</p> <p>“E-commerce skills” has been added by the author of this thesis.</p>
<p>Technological integration</p>	<p>Technological Integration is a factor used in the work of Martins &amp; Oliveira (2009).</p> <p>Martins &amp; Oliveira (2009) approach this factor through a “direct link to supplier through software” perspective. The perspective posited in this thesis is that for integration to happen, these days, a simple access to a web platform for purchasing may be an indicator of technological integration.</p> <p>The questions have been adapted to fit a questionnaire on e-purchasing.</p> <p>“Security applications” is a factor in the work of Martins &amp; Oliveira (2009) regarding online selling and also on the work of Sila &amp; Dobni (2012) “under the name” of “data security” and has been chosen to be placed under the “Technological integration” as it seemed more sensible to put it under this factor in the e-purchasing context.</p>

**Table 7 – Organizational and interorganizational factors and reasons for their choice.**

<b>ORGANIZATIONAL AND INTERORGANIZATIONAL FACTORS</b>	<b>Relevant sources for choice</b>
Company size	Company size is a factor used in the work of Martins & Oliveira (2009).
IT training	“IT training” is a factor used in the work of Martins & Oliveira (2009).
<p>Perceived Benefits</p> <ul style="list-style-type: none"> <li>• Perceived benefits of e-correspondence</li> <li>• Perceived benefits of e-purchasing</li> </ul>	<p>“Perceived benefits” is a factor used in the work of Martins &amp; Oliveira (2009) through the sub-construct “Perceived benefits of e-correspondence”.</p> <p>“Perceived benefits of e-purchasing” has been added by this thesis’ author as a sub-construct as it was thought to be relevant in this study.</p>
<p>Perceived obstacles</p> <ul style="list-style-type: none"> <li>• Costs</li> <li>• Reluctance to change</li> <li>• Process conflict</li> </ul>	<p>“Perceived obstacles” is a factor introduced by this thesis’ author, composed by:</p> <ul style="list-style-type: none"> <li>• “Costs”. Used by Sila &amp; Dobni (2012).</li> <li>• “Reluctance to change” introduced by the author as SME’s are sometimes pointed for being reluctant to change (based on the literature review).</li> <li>• “Process conflict” has been introduced by the author based on the article by Standifer &amp; Wall (2010) (which is not TOE related).</li> </ul>
Top management support	“Top management” is a factor used by several authors such as Sila & Dobni (2012) and Thompson et al (2009).
Trust	“Trust” is a factor used by Sila & Dobni (2012).
Awareness of suppliers’ e-readiness	<p>“Awareness of suppliers’ e-readiness” has been added by this thesis’ author from personal professional experience. Sila &amp; Dobni (2012) have used a similar factor named “Trading partner readiness”.</p> <p>However, since it was not possible to access the questions used to evaluate the factor, no considerations are made regarding whether these have strictly the same meaning or not.</p>

**Table 8 - Environmental factors and reasons for their choice.**

ENVIRONMENTAL FACTORS	Relevant sources for choice
<p>Pressure from trading partners</p> <ul style="list-style-type: none"> <li>• Persuasion from trading partners' benefits</li> <li>• Persuasion from trading partners' sales channels</li> <li>• Demand from key trading partners</li> </ul>	<p>“Pressure from trading partners” is a factor used by Sila &amp; Dobni (2012) which have placed it under the “Organizational and Interorganizational” umbrella. From the standpoint of e-purchasing seeing trading partners as part of the environment seemed to make sense. Thompson et al (2009) have also used this factor as an environmental factor.</p> <p>For this thesis, it has been built through three sub-constructs:</p> <ul style="list-style-type: none"> <li>• “Persuasion from trading partners’ benefits” has been added by this thesis’ author</li> <li>• “Persuasion from trading partners’ sales channels” is adapted from Thompson et al (2009) “Important business partners have recommended us to use e-procurement” mixed with the thesis’ author’s experience;</li> <li>• “Demand from key trading partners” is adapted from Thompson et al (2009) “Important business partners have requested us to use e-procurement” mixed with the thesis’ author’s experience and taking a more “radical” approach in order to test power dynamics derived from the study of Standifer &amp; Wall (2010);</li> </ul>
<p>Bargaining power</p>	<p>“Bargaining power” is introduced to test power dynamics derived from the article of Standifer &amp; Wall (2010).</p>

It is common to observe in different publications, the TOE factors are not all placed under the same “umbrella”, i.e., Technological, Organizational or Environmental. However, that subjectivity of interpretation and conviction of each author does not seem to affect the analysis if the influence of each factor is studied as an influence to a dependent variable. The only caution to have in the interpretation of the final results is if a final statement such as “The technological factors have the most influence on the



independent variable” (for example) is made. In such cases, one should look carefully at the factors that have been included in each category.

### **3.5. Questionnaire and explanatory variables**

The questionnaire was designed and tested to be as compact and direct as possible in order not to disperse the user’s attention. The order of the questions was also arranged taking that into account. Most questions are yes/no or five point Likert scale type. All companies, whether they have purchased online or not were able and required to answer all questions. For that to be possible, the Likert scale type questions included the nuance of for example “did/would this impact?” Since perceptions are being evaluated in those questions, it was found to be interesting not to exclude the “non-purchasers”.

The questionnaire was designed through the following steps:

1. Design of the TOE framework;
2. Design of questions and adaptation of questions (used by other authors) related to each TOE framework’s item;
3. Gathering opinions from e-commerce/procurement specialists;
4. Applying the questionnaire to a sample of companies (observing and getting real time feedback from the people answering the questions);
5. Rearranging of the questionnaire and repetition of the pre-test in the same fashion as in step 3;

After this process, the questionnaire was then ready to be sent to the sample of companies in order to most accurately measure the determinants of e-purchasing by SME’s. It was designed and sent in the Portuguese language. In Annexes I and II both the original Portuguese version and translated to English version can be found.

Below, a definition of the explanatory (independent variables is done). In front of each variable, the number of the corresponding question in the questionnaire is presented.

**Table 9 – Definition of the explanatory variables and correspondence in the questionnaire.**

Variables	Question correspondence in order
<b>Frequency of online purchasing</b> (dependent non-explanatory variable) was measured by a 0 to 5 point Likert scale ranging from “Never” to “Whenever possible”.	1
<b>Technological readiness</b> was evaluated by three variables: <ul style="list-style-type: none"> <li>• <b>IT infrastructures:</b> <ul style="list-style-type: none"> <li>○ List of types of technologies used by the firm<sup>2</sup></li> <li>○ Priority given to the knowledge and usage of IT (ranging from 0 to 5)</li> </ul> </li> <li>• <b>IT skills:</b> measured by IT human resources item standing for the existence of dedication to IT by staff of the firm (yes/no)<sup>1</sup></li> <li>• <b>E-commerce skills:</b> measured by the Easiness of online purchasing (ranging from 0 to 5)</li> </ul>	4  5  7
<b>Technological integration:</b> evaluated by four variables: <ul style="list-style-type: none"> <li>• Automatic connection to a supplier for purchasing (yes/no)</li> <li>• Willingness to use suppliers’ online store (0 to 5)</li> <li>• Having informatics security systems (yes/no scale)</li> <li>• Importance given to informatics security systems (0 to 5).</li> </ul>	8  9  10  11
<b>Company size:</b> measured by 1 variable: Micro firms (1 to 4 employees); Very small firms (5 to 9 employees); Small firms (10 to 49 employees); Medium firms (50 to 250 employees). <sup>2</sup>	35
<b>IT training:</b> measured by: <ul style="list-style-type: none"> <li>• Employees had IT training during the last three years (yes/no)</li> <li>• Influence of IT training on IT skills (0 to 5)</li> </ul>	12  13

<sup>1</sup> Due to the fact that all responses were gathered through the internet, those variables are in reality constant. In theory, they should be taken into account, but in this particular study, they had to be dropped.

<sup>2</sup> Turnover and Balance sheet total criteria according to the EU definition in CEC (2003) were not taken into account for the sake of simplification of the questionnaire’s process as probably most respondents would not be able to report reliable information.

Variables	Question correspondence in order
<p><b>Perceived benefits:</b> measured through four variables:</p> <ul style="list-style-type: none"> <li>• Perceived benefits of e-correspondence (2 items) constructed by: <ul style="list-style-type: none"> <li>○ Email as the main form of business communication (in the last 5 years) (yes/no)</li> <li>○ Priority given to the use of email (0 to 5)</li> </ul> </li> <li>• Perceived benefits of electronic e-purchasing (2 items) constructed by: <ul style="list-style-type: none"> <li>○ Online purchasing experience having impact in the relationship with suppliers (yes/no)</li> <li>○ Kind of impact of online purchasing has or would have in the relationship with suppliers (0 to 5).</li> </ul> </li> </ul>	<p>14</p> <p>15</p> <p>16</p> <p>17</p>
<p><b>Perceived obstacles:</b> measured by four variables:</p> <ul style="list-style-type: none"> <li>• <b>Costs:</b> (2 items): <ul style="list-style-type: none"> <li>○ Having added cost for buying online (yes/no)</li> <li>○ Acceptability of the cost of buying online in relation to the benefits (0 to 5).</li> </ul> </li> <li>• <b>Reluctance to change</b> measured by Internal processes tending to remain the same through the years (yes/no)</li> <li>• <b>Process conflict</b> measured by perception of more companies would buy online if purchasing processes would not change significantly (0 to 5)</li> </ul>	<p>18</p> <p>19</p> <p>20</p> <p>21</p>
<p><b>Top management support</b> measured by two variables</p> <ul style="list-style-type: none"> <li>• Top management of company has a clear position regarding online purchasing (yes/no)</li> <li>• Position the top managers of the company have regarding online purchasing (0 to 5)</li> </ul>	<p>22</p> <p>23</p>

Variables	Question correspondence in order
<b>Trust:</b> measured by two variables: <ul style="list-style-type: none"> <li>• Process flexibility with trusted suppliers (yes/no)</li> <li>• Willingness to buy online from trusted suppliers (0 to 5)</li> </ul>	24 25
<b>Awareness of supplier's e-readiness:</b> measured by awareness of main supplier's ability to sell online (yes/no).	26
<b>Pressure from trading partners:</b> measured by five variables: <ul style="list-style-type: none"> <li>• <b>Persuasion from trading partners benefits:</b> <ul style="list-style-type: none"> <li>○ Having special benefits for purchasing online (yes/no)</li> <li>○ Influence of special benefits for purchasing online (0 to 5)</li> </ul> </li> <li>• <b>Persuasion from trading partners sales channels:</b> <ul style="list-style-type: none"> <li>○ Suppliers suggest that company should buy through their online channel (yes/no)</li> <li>○ Influence of suppliers' suggestions in online purchasing habits (0 to 5).</li> </ul> </li> <li>• <b>Demand from key trading partners:</b> Suppliers demand company to buy online (yes/no)</li> </ul>	27 28 29 30 31
<b>Bargaining power:</b> measured by the perceived negotiation power of the company (0 to 5).	32

Questions number 2, 3, 6, 33 and 34 are not referenced in the factors as they do not belong to the designed TOE framework. They were done in order to provide a deeper knowledge of the population sample and their responses are further shown in the descriptive statistics analysis (sections 4.1 and 4.2).

### 3.6. Population and sample

The target population consists of the elements who share the characteristics to be studied. When it is not possible to study the whole universe, the use of a sample of this population is a mean through which information about the target population can be gathered (Malhotra, 2007).

In this thesis, a convenience sample has been used. The author is aware that there are risks of bias and non-representation of the universe (Malhotra, 2007). However, the fact that most respondents are more prone to buying online (since they have access to the internet) may even prove useful, as the purpose of this thesis is to study the drivers of e-purchasing (a good amount of e-purchasers is needed).

The target population for this study is the universe of Portuguese SMEs from every industry sectors<sup>3</sup>.

In order to determine the sample size, the equation proposed by Krejcie & Morgan (1970) is widely used in the literature:

$$s = X^2 NP(1 - P) \div d^2 (N - 1) + X^2 P(1 - P)$$

- $s$  = sample size to be determined;
- $X^2$  = the critical value at the desired confidence level (for a 95% confidence level, 3.841);
- $N$  = the population size;
- $P$  = the population proportion (assumed to be .50 since this would provide the maximum sample size);
- $d$  = the degree of accuracy expressed as a proportion (.05);

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<sup>3</sup> The initial idea was to apply this study to Portuguese construction SMEs. However, some field investigation done by the author, concluded that almost only one supplier in the whole industry is systematically pushing its online sales channel.

Alternatively, a frequently used rule of thumb would be to get a sample of around 1% to 3% of the total population. If that is not possible, at least 100 respondents would be necessary (also used as a rule of thumb for exploratory studies).

Almost 300 responses were gathered. The total universe of Portuguese SME's (non-financial) is estimated to be around 1.061.952 (Pordata, 2015), so the sample accounts for around 0,028% of the total population. The sample is clearly much lower than that required both by the formula of Krejcie & Morgan (1970) and the 1% to 3% rule of thumb. However, the sample is big enough that the Law of Large Numbers applies and hence is suitable for an exploratory study.

The survey was designed to measure technological, organizational and environmental factors that affect e-purchasing use in these companies.

### **3.7. Data collection and analysis**

Responses were gathered through direct emails to companies chosen through a data base, direct contact through their Facebook and LinkedIn pages and direct personal contact. E-mail and Facebook have been the predominant source for responses and Google Survey has been the platform used to collect and record the answers. Responses were collected from May 24<sup>th</sup> to August 17<sup>th</sup>. A total of 279 responses were collected and 272 were considered valid. Data has been treated with both *Microsoft Excel* and *IBM SPSS Statistics 22*.

It was not possible to gather responses from companies that do not have email or internet due to time and means constraints. So, the sample consists of companies who have access to the internet which may certainly have influenced the results. However, the fact that so many SME's have access to the internet, have email and even Facebook pages is in itself a cheering indicator of IT readiness.

The data analysis included descriptive statistics of all variables, the Spearman's Rho (non-parametric test) and Oneway ANOVA. Cronbach's alpha has also been calculated. In the respective sections, the reasons for the use of each statistical tool will be detailed.

## **IV. Data analysis and results**

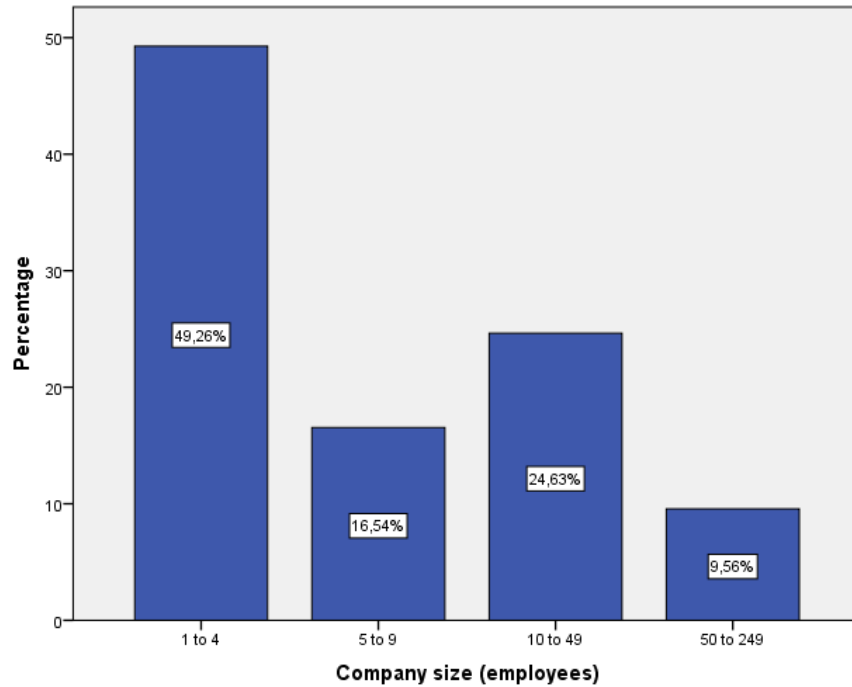
In this chapter a characterization of the sample will be made and presented as well the descriptive statistics which resulted from the application of the questionnaire to the sample. Then, statistical methods will be applied in order to test the consistency of the instrument followed by statistical test to uncover evidence of relationships between each independent variable and the dependent variable as well as the strength of the relationships. A test was also performed to search for different characteristics among subgroups of the sample (in relation to company size).

### **4.1. Data Sample characterization**

This questionnaire could be answered by any company with access to the internet. A total of 280 responses were gathered. However, eight of them have been discarded as invalid due to repeated answers or highly incongruent answers.

#### **i. Company size**

Regarding company size, the respondents were predominantly micro companies (1 to 4 and 5 to 9 employees) accounting for around 66% of the sample, followed by small companies (10 to 49 employees) representing about 25%. Medium companies (50 to 249 employees) account for the remaining percentage.

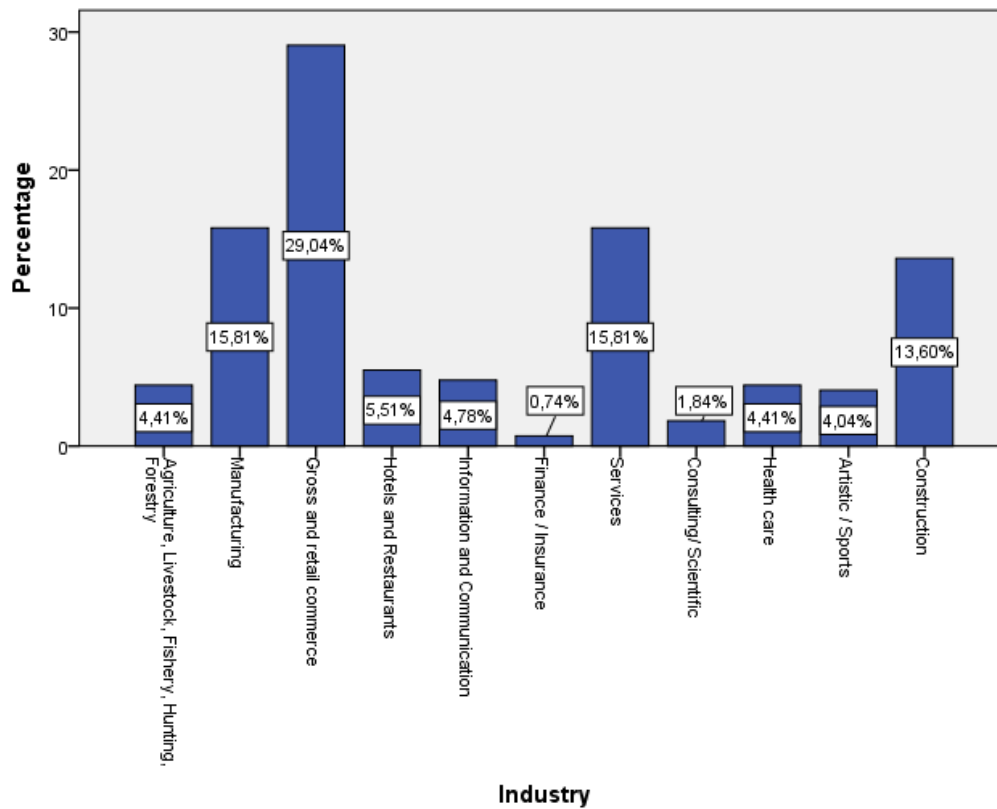


**Fig. 7 – Company size.**

ii. Industry

By looking at the sample regarding industry type, there is a predominance of “Gross and retail commerce” (around 29%), followed by the “Manufacturing Industry” and “Services” (in equal percentage (about 16%). Construction accounts for almost 14% of the sample. The other industries are less represented, though there were responses from companies of a wide range of sectors.





**Fig. 8 – Industry.**

iii. Location

Most respondents are companies from the North of Portugal (Porto and Braga accounting for about 62%) followed by the Center Region with Lisbon standing out with approximately 13% of the responses.

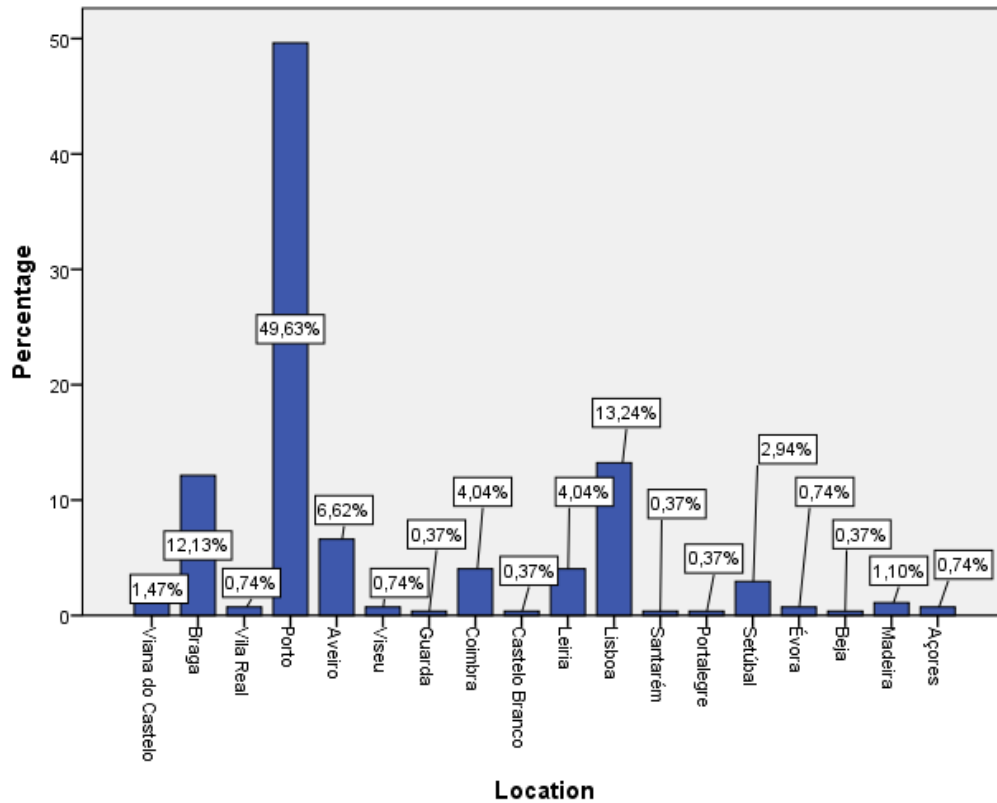


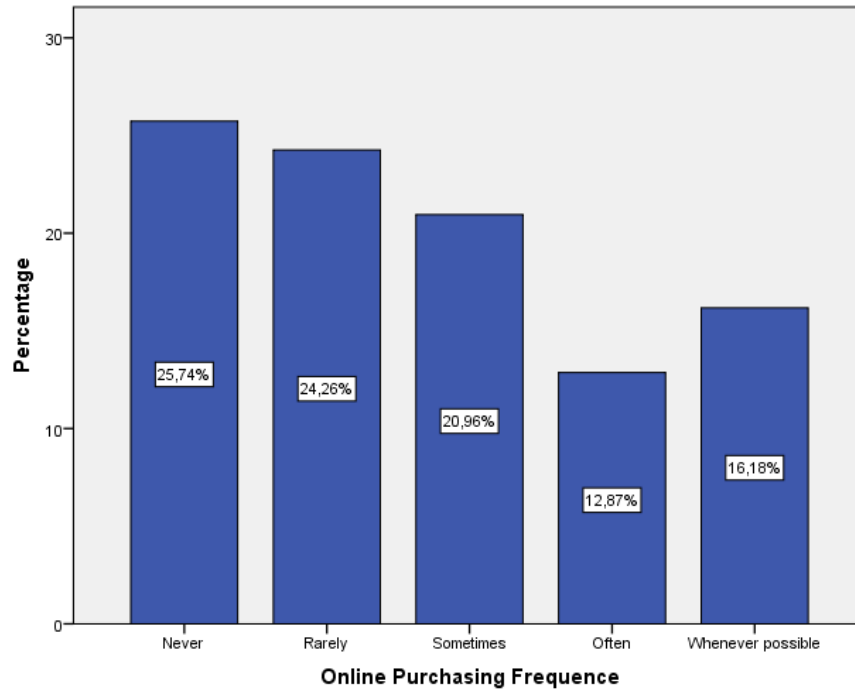
Fig. 9 – Location.

## 4.2. Online purchasing behavior

### 4.2.1. Online purchasing frequency

Approximately 74% of the companies have purchased online for the last year at least once. About 50% have bought online sometimes frequently or whenever possible and another half have rarely bought online or never purchased online for the last year. Around 26% respondents have not made any online purchase. Thus, online purchasers outweigh the non-purchasers.

The median for the “Online purchasing frequency” is 2,5 (SPSS output). Therefore, there is a “positive” inclination of the respondents towards online purchasing.

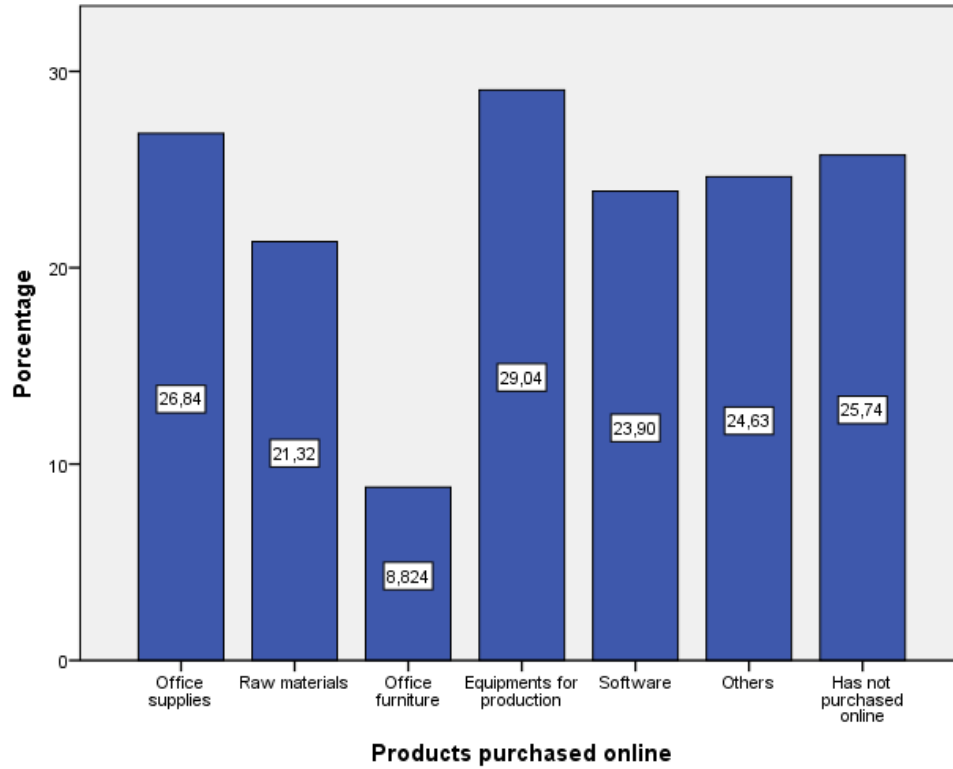


**Fig. 10 – Online purchasing frequency.**

#### **4.2.2. Types of products purchased online**

There is a certain homogeneity in the percentages of each type of products bought by companies except for the type of product “Office furniture” since the purchasing cycle for it is naturally longer. The category “others” was not explored for practical reasons since the product categories provided were thought to be the main ones worth studying and most used.

These results indicate a positive receptiveness to online purchasing, since purchasers have reported to have bought different types of products. This may reflect the fact that companies which purchase online are not discriminating their purchases by product category for hypothetical reasons such as fear of purchasing a certain product and mistrusting the suppliers of specific product types.



**Fig. 11 – Types of products that were purchased online.**

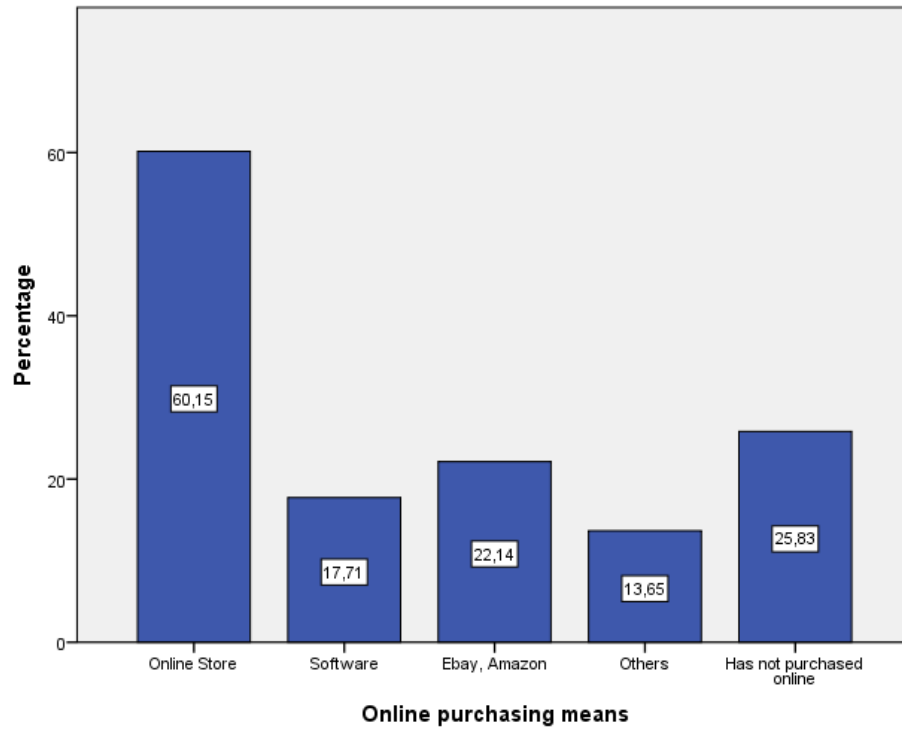
#### **4.2.3. Online Online purchasing means**

The main mean used to purchase online has been the supplier's online store with around 60%. Then, platforms such as EBay and Amazon account for around 22 %.

Possible reasons for a much higher percentage in the suppliers' online store purchases may be trust, proximity and easiness of purchasing<sup>4</sup>.

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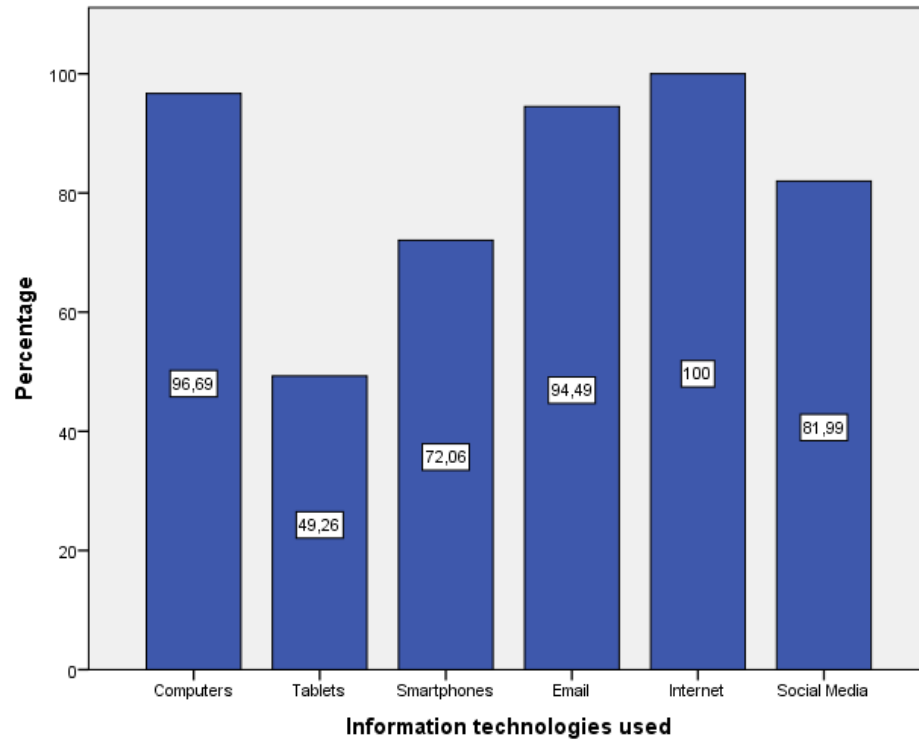
<sup>4</sup> It would be interesting to explore in a further study the reasons for suppliers online store preference.



**Fig. 12 – Means used to purchase online.**

#### **4.2.4. IT means used by companies**

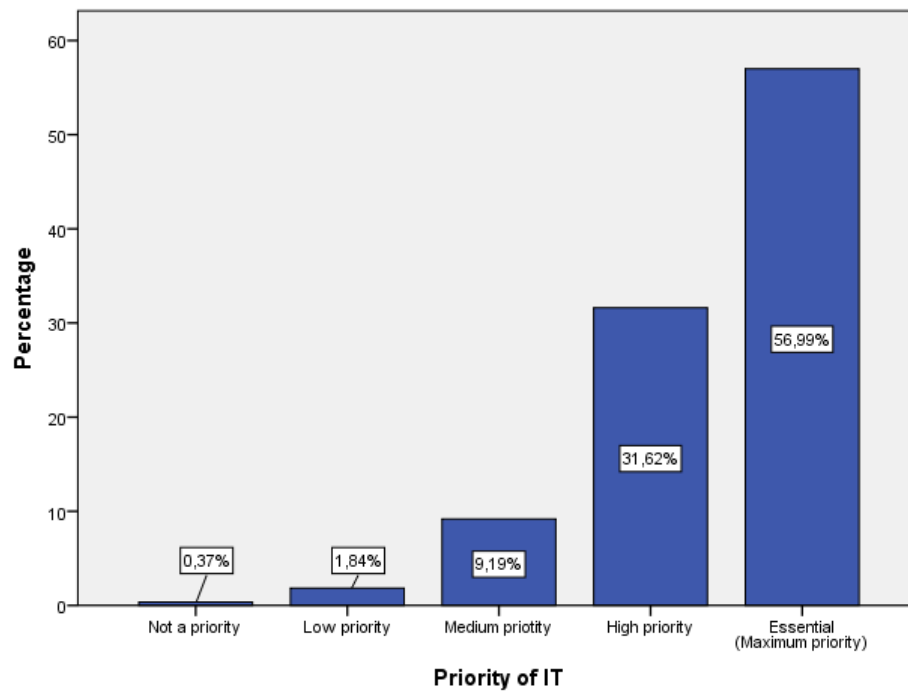
Since the mean of collecting data for this investigation has been the internet, it is implicit that every respondent's company had access to the internet (with email and/or social media) and that at least one hardware type of device had been used in the company. The only mean less used is tablets. The mix of hardware devices and web platforms is rather rich.



**Fig. 13 – Information technologies used by the companies.**

#### **4.2.5. Priority given to the knowledge and usage of IT**

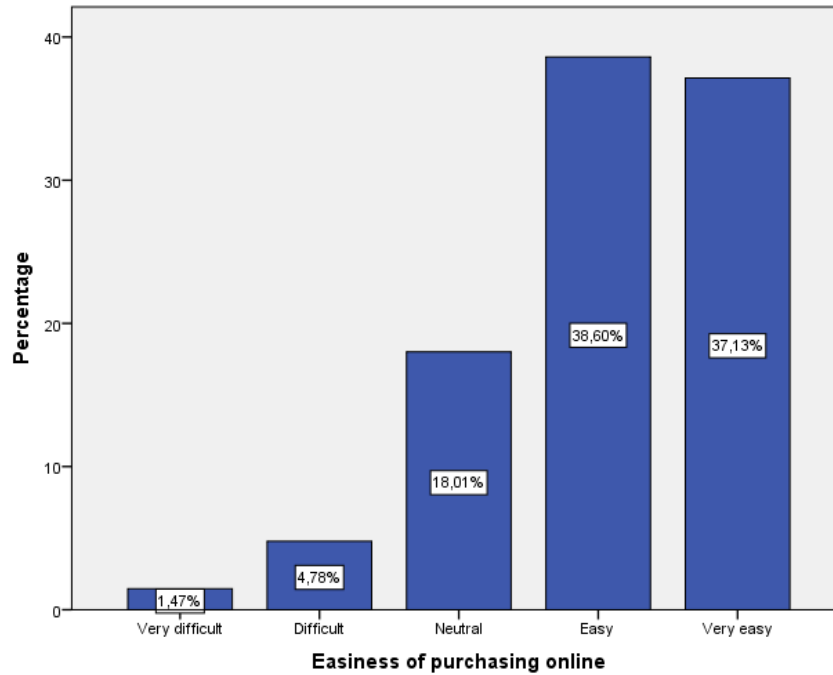
Approximately 89% finds the knowledge and usage of IT a total priority or a priority while about 9,0% view it as a medium priority. This indicates that the great majority of companies are aware of the importance of IT.



**Fig. 14 – Priority given to technology information.**

#### **4.2.6. Easiness of online purchasing**

The great majority of respondents (almost 76%) find it easy or very easy to buy online. Only a small minority (about 6%) find it difficult or very difficult. It can be inferred that the perception of companies is that purchasing online is relatively easy. The median for this question is 4 on the Likert scale.



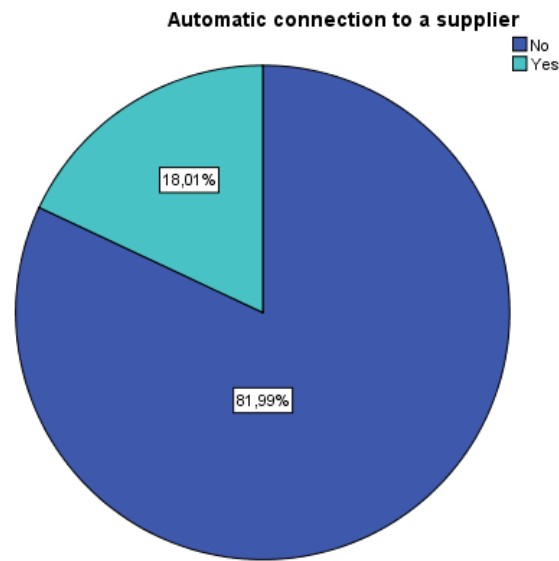
**Fig. 15 – Easiness of purchasing online.**

#### **4.2.7. Automatic connection to a supplier for purchasing**

The great majority of companies (approximately 82%) have not been directly connected via software to the supplier for online purchasing.

In spite of this, the fact that around 18% answered positively, it is important to mention that during the pre-test, it was observed that many respondents were not fully aware of the meaning of being directly connected to a supplier's software. So, the possibility of withdrawing this question was considered. However, the decision was to simplify the question and leave it there since it could always be dropped from the analysis if thought necessary. It is plausible to assume that this question may not have been correctly interpreted. The conclusions to be drawn further regarding this variable must be handled with caution.



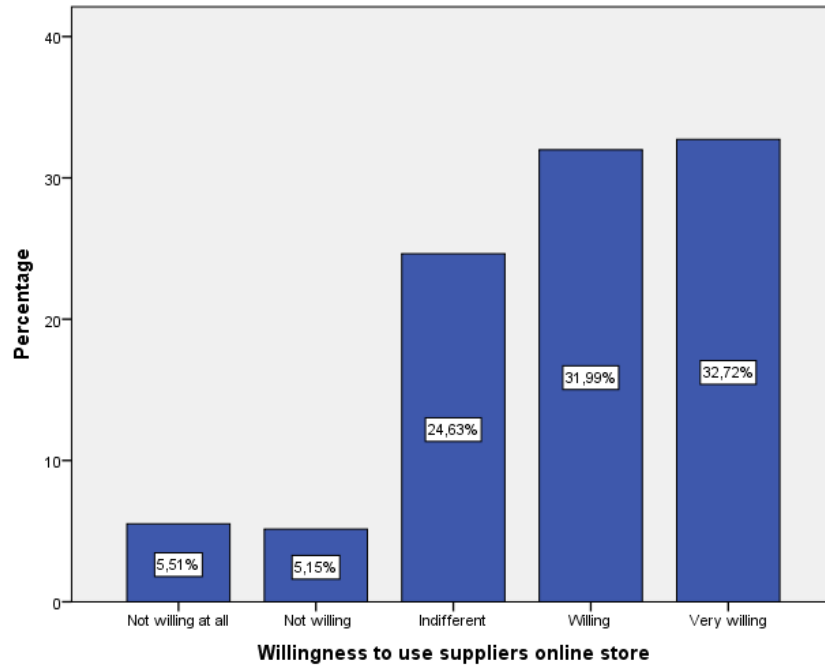


**Fig. 16 – Automatic connection to supplier for purchasing online.**

#### **4.2.8. Willingness to use supplier's online store**

Approximately 65% of respondents are willing or totally willing to purchase via online store while almost 25% are indifferent (these can probably be persuadable). Only around 11% belong to the bottom of the scale (1 and 2) in willingness.

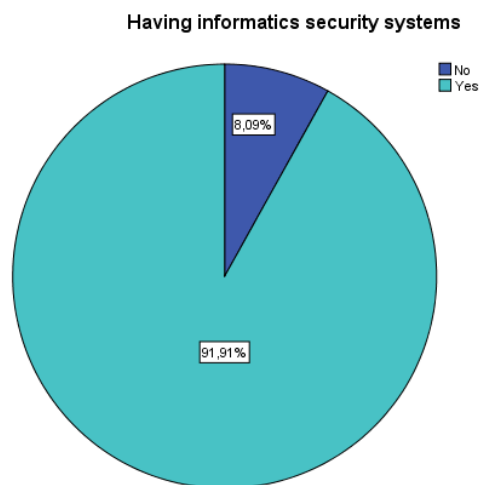
It is plausible to assume that there is a positive attitude towards buying online through online store of the supplier (matching the results showed previously that supplier's online store is the main mean of online purchasing for SME's).



**Fig. 17 – Willingness to use supplier’s online stores.**

#### **4.2.9. Having informatics security systems**

The great majority (around 92%) of companies report to use some sort of systems information security.



**Fig. 18 – Informatics security systems.**

#### 4.2.10.Importance given to informatics security systems

Approximately 77% totally agrees on the importance of these systems and about 93% agrees or totally agrees. Thus, most companies are reported to be aware of the importance of these systems for their business.

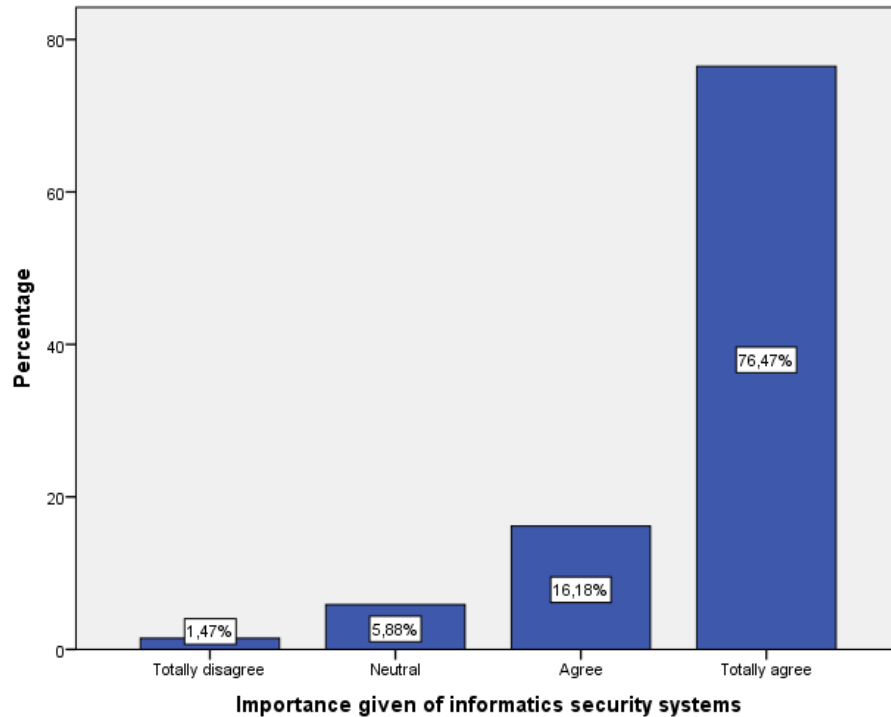
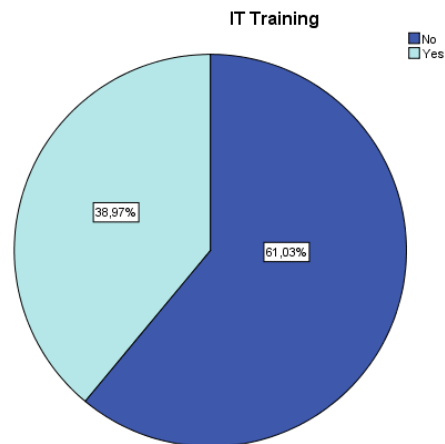


Fig. 19 – Importance given to informatics security systems.

#### 4.2.11.Employees had IT training during the last three years

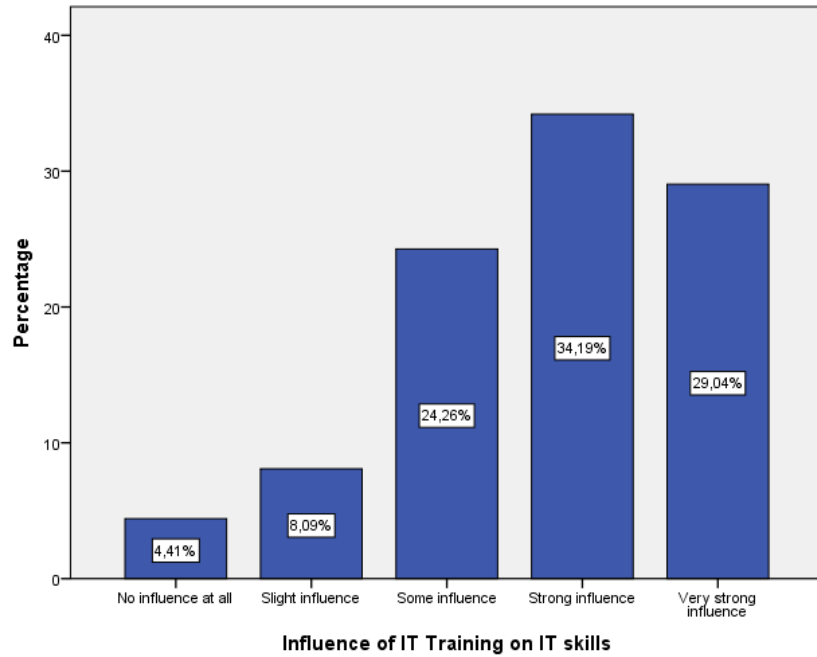
Looking at IT training, 61% of respondents have reported not to have had IT training provided by their company in the last 5 years. Only 39% had training. Apparently, there is little investment in this field.



**Fig. 20 – Information technology training.**

#### **4.2.12. Influence of IT training on IT skills**

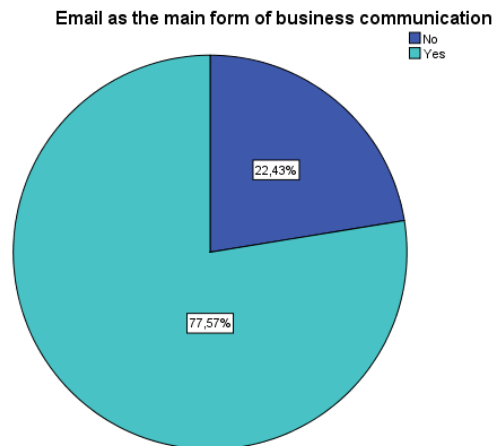
When asked about the positive influence the training programs had or would have had in their IT skills, about 88% of respondents answer in the range of 3 to 5 in the Likert scale (from some influence to extreme influence). This indicates receptivity to training and the awareness that training might improve people's IT skills.



**Fig. 21 – Influence of information technology training.**

#### **4.2.13.Email as the main form of business communication**

Approximately 78% have used email as the main form of business communication. This indicates that email usage is embedded in operations of SME's.



**Fig. 22 – Email as main form of communication.**

#### 4.2.14. Priority given to the use of email

About 79% of respondents prioritize (always or almost always) email over other forms of communication. This result is consistent with the responses to the previous question.

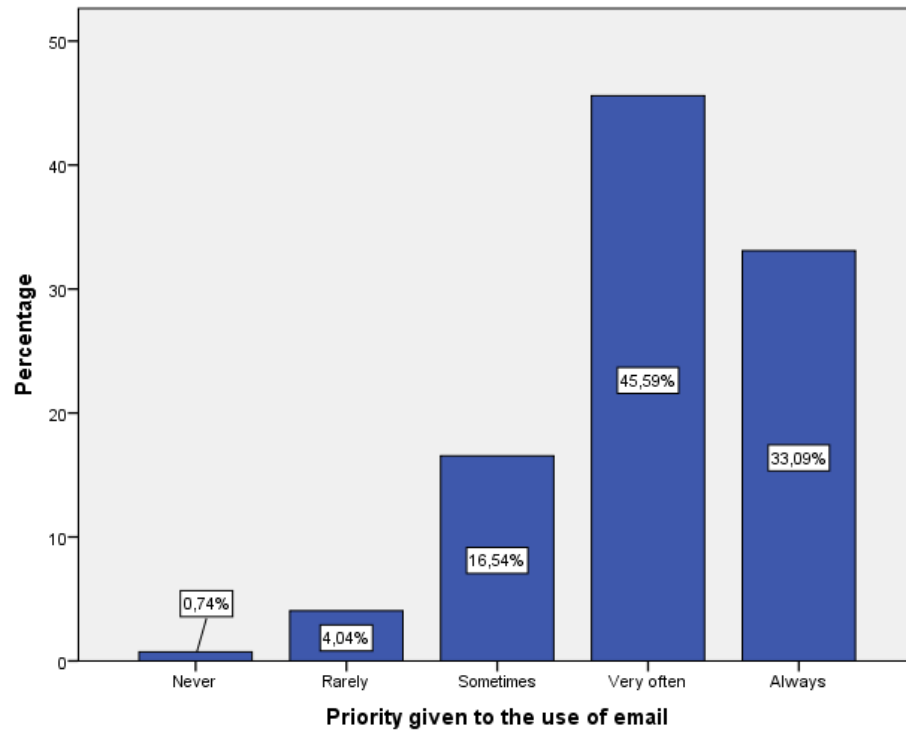
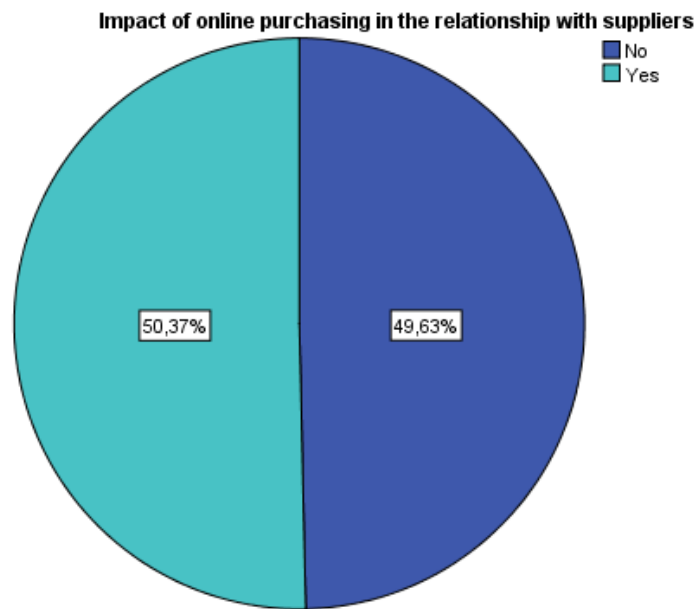


Fig. 23 – Priority given to the use of email.

#### 4.2.15. Online purchasing experience having impact in the relationship with suppliers

Responses to this question show around 50% towards each “side”. However, the next question regarding the type of impact is more revealing of reality.

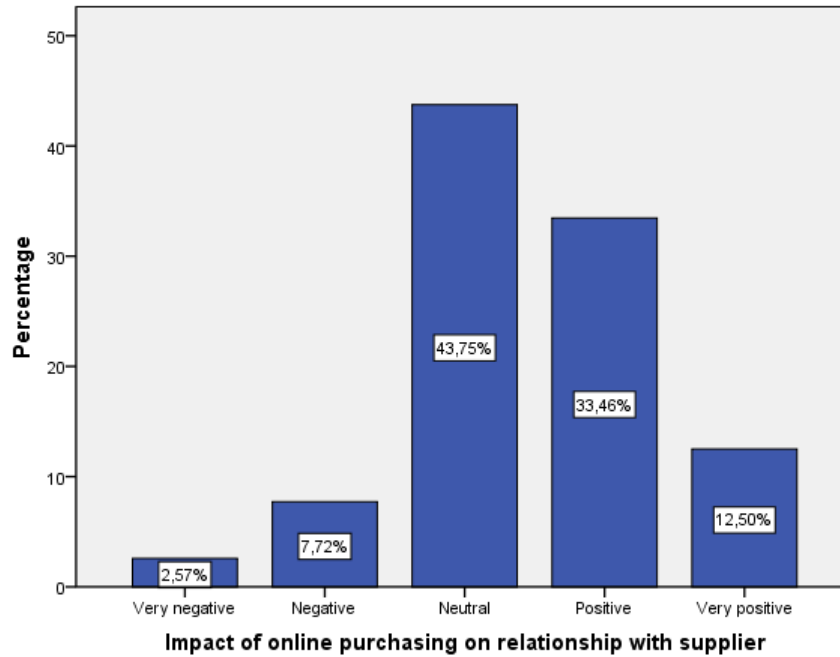


**Fig. 24 – Impact of online purchasing in the relationship with suppliers.**

#### **4.2.16. Kind of impact of online purchasing has or would have in the relationship with suppliers**

Approximately 46% report a positive impact while about 44% report a neutral impact (which explains the results of the previous question where no option of “neutral impact” had been available in the answering box. Only about 10% of respondents believe the impact to be negative or very negative.

From these responses, one can see there a significant percentage of “indifference” and a low perception of negative impact. By placing the causality in the supplier, there seems to be room for improvement on the impact from “neutral” to “positive” or “very positive”. At the same time, it seems that suppliers which sell online are doing a fairly good job.



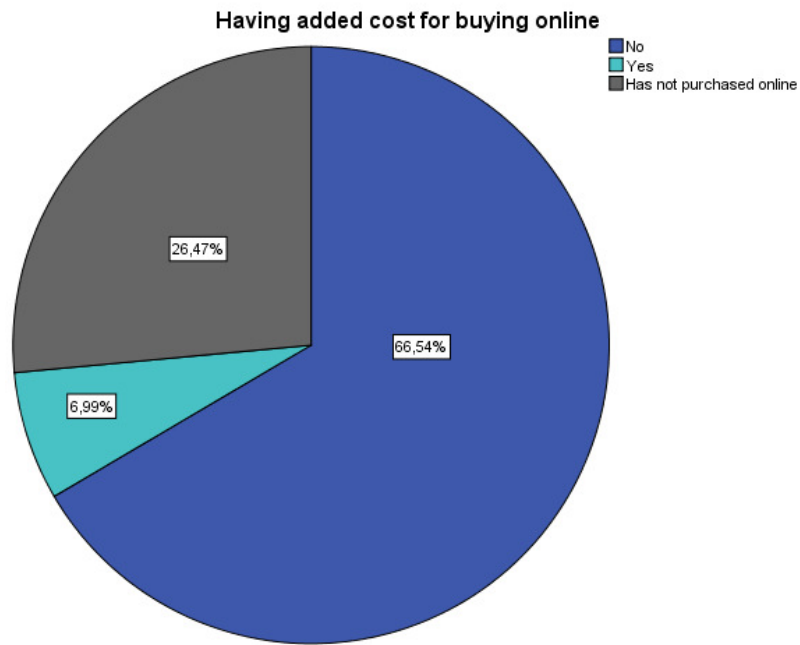
**Fig. 25 – Type of impact of online purchasing in relationship with supplier.**

#### **4.2.17. Having added cost for buying online**

When evaluating the perception of having had added costs from buying online (in comparison to the costs of purchasing via other means, around 67% of the sample (about 90,5% of online purchasers) reported to have had no added costs.

Only around 7% of the sample (circa 9,5% of online purchasers) reported to have had added costs.



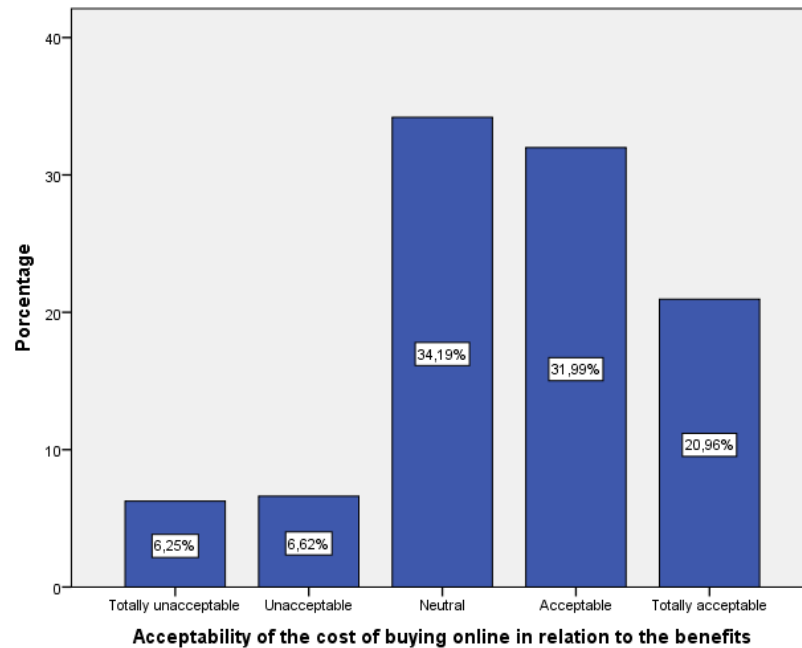


**Fig. 26 – Added costs for online purchasing.**

#### **4.2.18. Acceptability of the cost of buying online in relation to the benefits**

Approximately 53% of respondents think costs are fairly or totally acceptable. Since about 34% are indifferent to those costs, in practice, they also accept them. Therefore, it can be concluded that about 87% of respondents think the benefits of purchasing online are at least acceptable in relation to the costs.

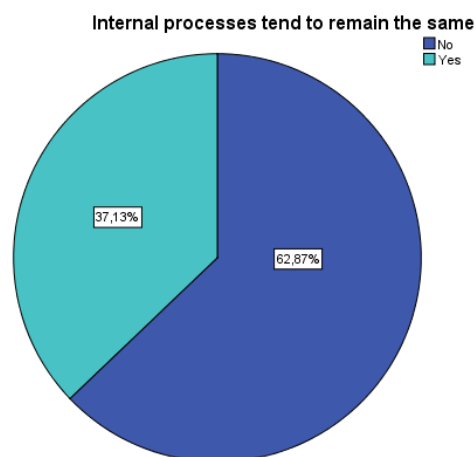
Only around 13% consider those costs unacceptable or totally unacceptable.



**Fig. 27 – Acceptability of costs versus benefits of online purchasing.**

#### **4.2.19. Internal processes tend to remain the same through the years**

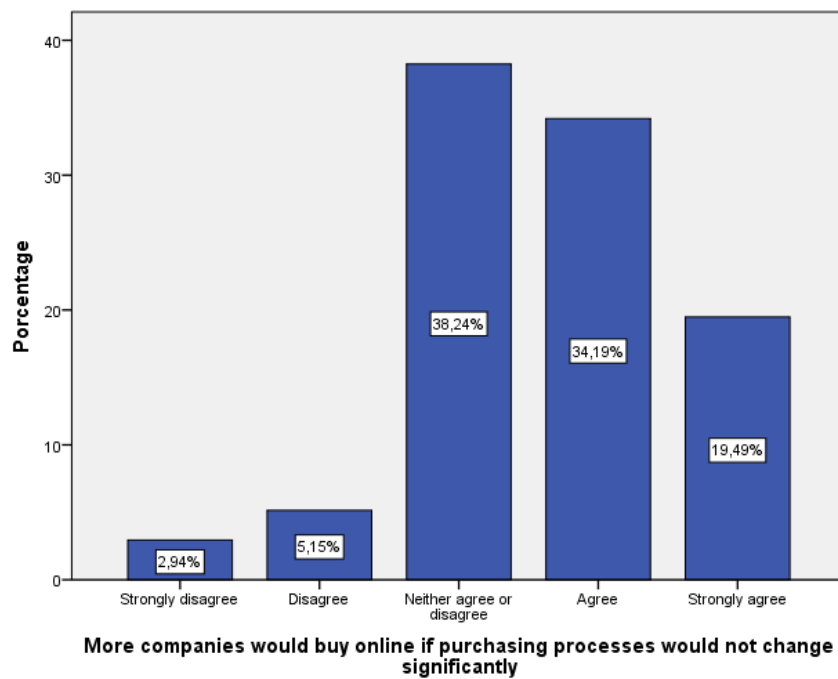
Processes change in approximately 63% of companies. Assuming this question is an accurate indicator of resistance to change, it is rather low contrary to common belief that small companies are slower and resistant to change.



**Fig. 28 – Reluctance to change.**

#### **4.2.20. More companies would buy online if purchasing processes would not change significantly**

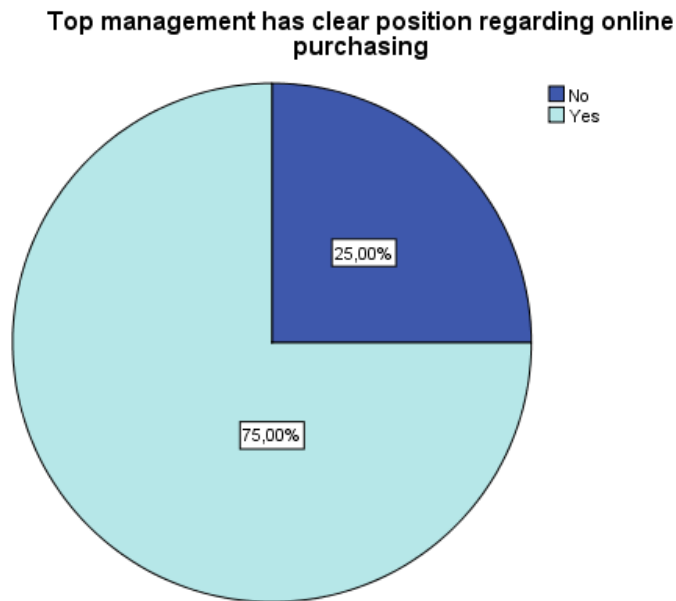
About 54% agrees or totally agrees that if perceived change was low, more companies would buy online. Around 38% do not seem to believe perceived change is an issue which affects online purchasing. Around 8% disagrees or totally disagrees. So 46% of respondents do not believe resistance to change is a “problem”.



**Fig. 29 – Process conflict and e-purchasing.**

#### **4.2.21. Top management of company has a clear position regarding online purchasing**

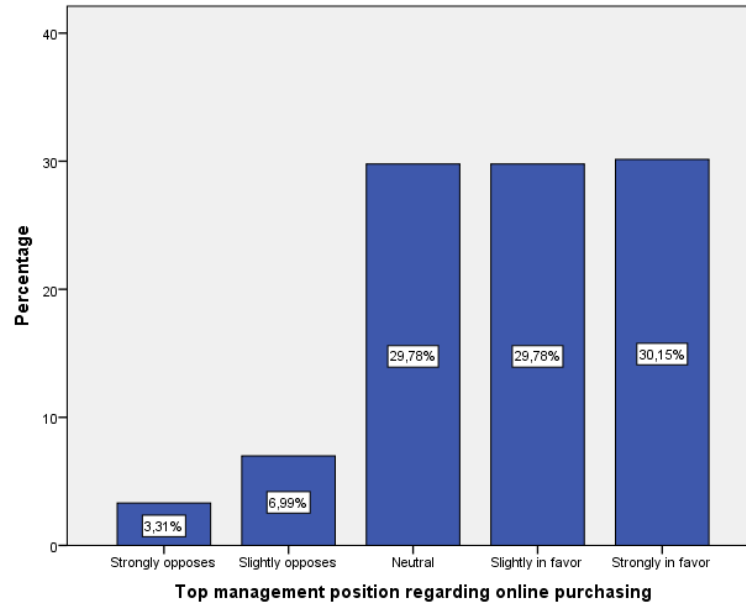
In the sample, 75% considers their top management to have a clear position regarding online purchasing.



**Fig. 30 – Top management having position regarding online purchasing.**

#### **4.2.22.Position the top managers of the company have regarding online purchasing**

About 60% of the samples top managers a reported to be slightly or totally in favor of online purchasing. Approximately 30% are clear about having no opinion and only 7% oppose or slightly oppose. Hence, the top management of these companies is be clear in communicating their position towards online purchasing and that position seems to be rather favorable.

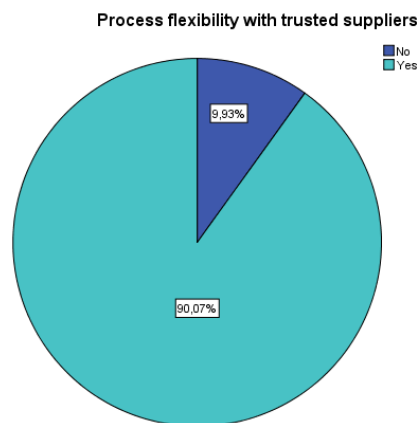


**Fig. 31 – Top management's position regarding online purchasing.**

#### **4.2.23.Process flexibility with trusted suppliers**

Most companies report to be more flexible with partners in whom they highly trust (about 90%).

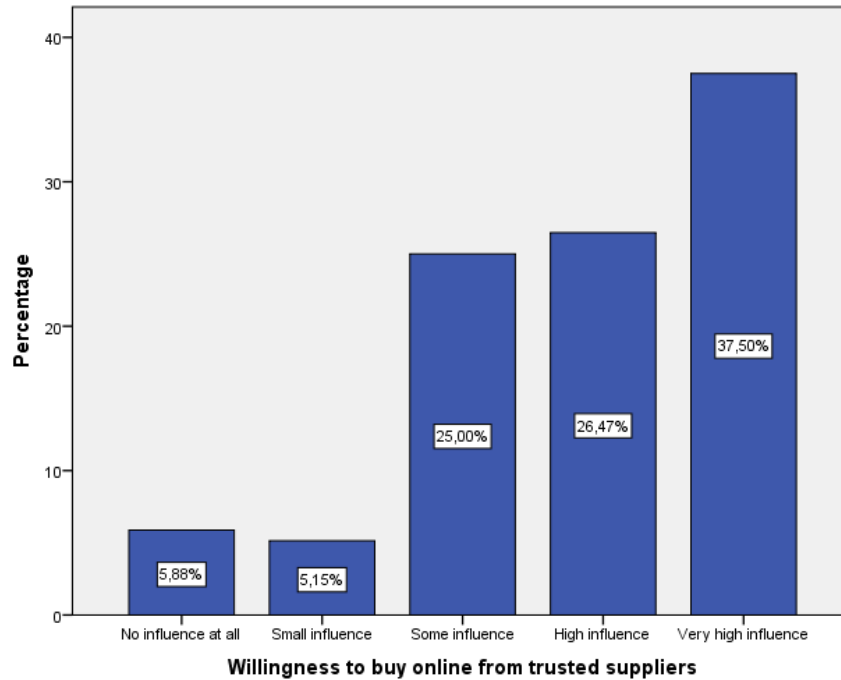
This may be an indicator that they are more prone to be influenced into purchasing online from them. The next question will evaluate that.



**Fig. 32 – Process flexibility with trusted suppliers.**

#### 4.2.24. Willingness to buy online from trusted suppliers

Approximately 89% admit that a trusted trading partner would have at least some influence in their online purchasing habits. Only a minority of about 11% reports it would have little or no influence.



**Fig. 33 – Willingness to buy online from trusted suppliers.**

#### 4.2.25. Awareness of suppliers' e-readiness to sell online

Approximately 52% does not know whether their main suppliers sell online. This is probably the suppliers' responsibility.

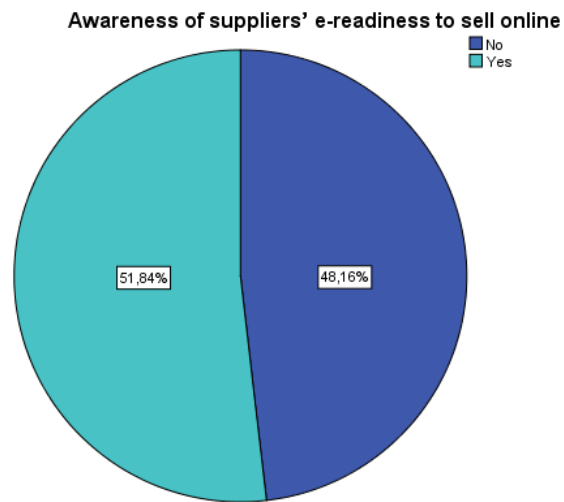


Fig. 34 – Awareness of supplier's e-readiness.

#### 4.2.26. Having special benefits for purchasing online

About 35% of respondents report that suppliers provide them with special benefits from buying online.

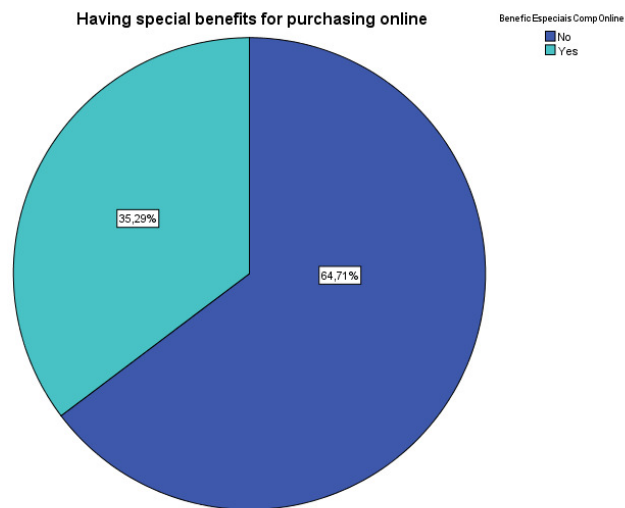


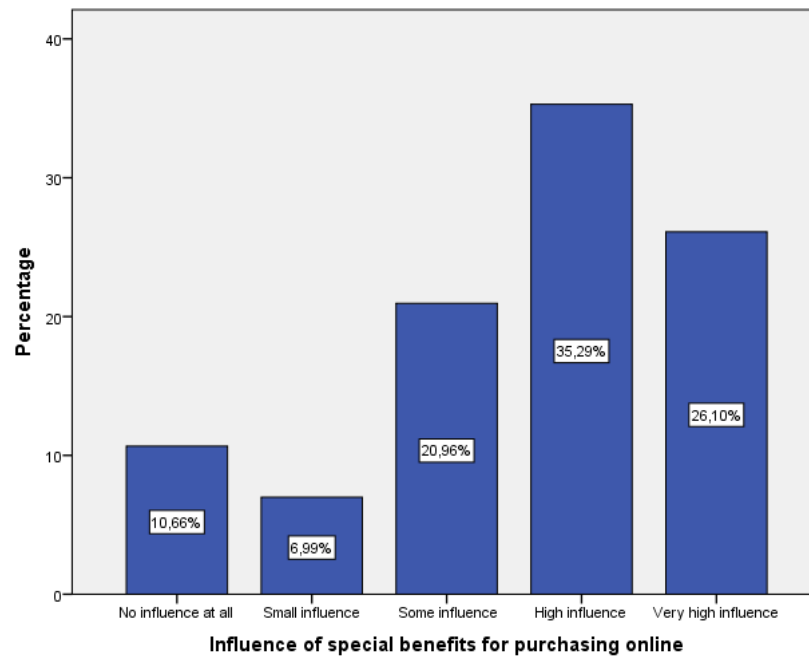
Fig. 35 – Special benefits from purchasing online.

#### 4.2.27. Influence of special benefits for purchasing online

Approximately 61% report that the existence of special benefits has or would have influence or a lot of influence while around 21% admits it would have some influence. Therefore, about 82% of companies admit they would be somewhat influenced by special benefits.

Only about 18% refuse the idea they would buy more online due to special benefits provided by suppliers.

Special benefits seem an effective way to increase online purchasing.

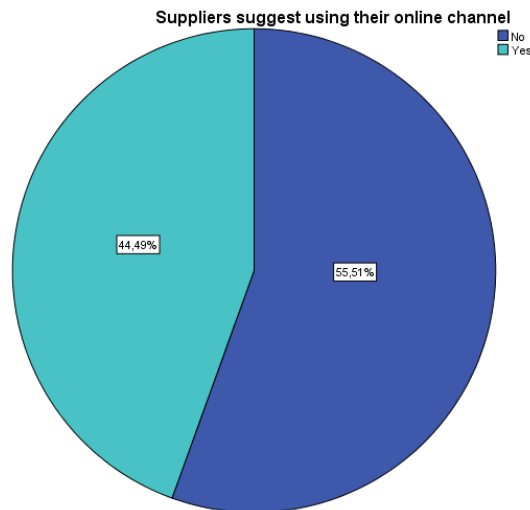


**Fig. 36 – Influence of special benefits on online purchasing habits.**



#### **4.2.28. Suppliers suggest that company should buy through their online channel**

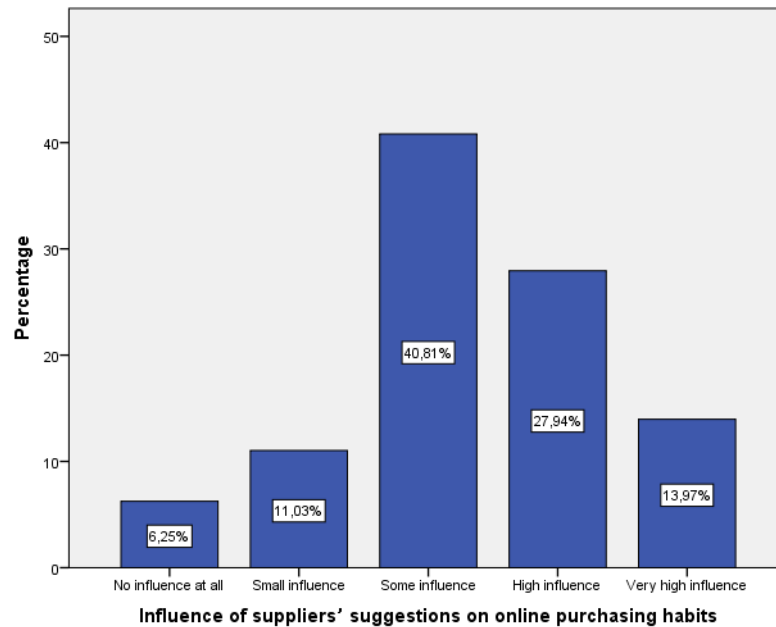
Approximately 56% says suppliers do not suggest them to buy online. There is still a large group of suppliers that do not suggest online purchasing (some of them may not even have online sales channels).



**Fig. 37 – Suppliers suggest online purchasing.**

#### **4.2.29. Influence of suppliers' suggestions in online purchasing habits**

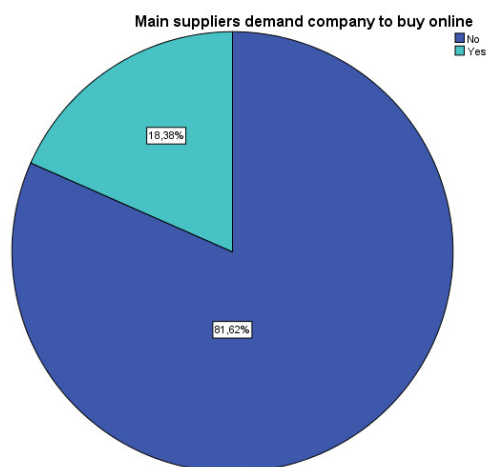
Approximately 42% admit suggestions have or would have influence or a lot of influence in increasing their online purchasing habits. Around 41% admits it would have some influence. Hence, approximately 83% admits they would at least be somewhat influenced into purchasing online. About 17% believe they would be lowly influenced or not influenced at all. However, some companies who are online purchasers may think this factor does not or would not make them buy more online.



**Fig. 38 – Influence of supplier's suggestions.**

#### **4.2.30. Main suppliers demand company to buy online**

Approximately 82% reports not to be obliged to purchase online from suppliers. Thus, the majority of online purchasers do not do it by demand from suppliers.

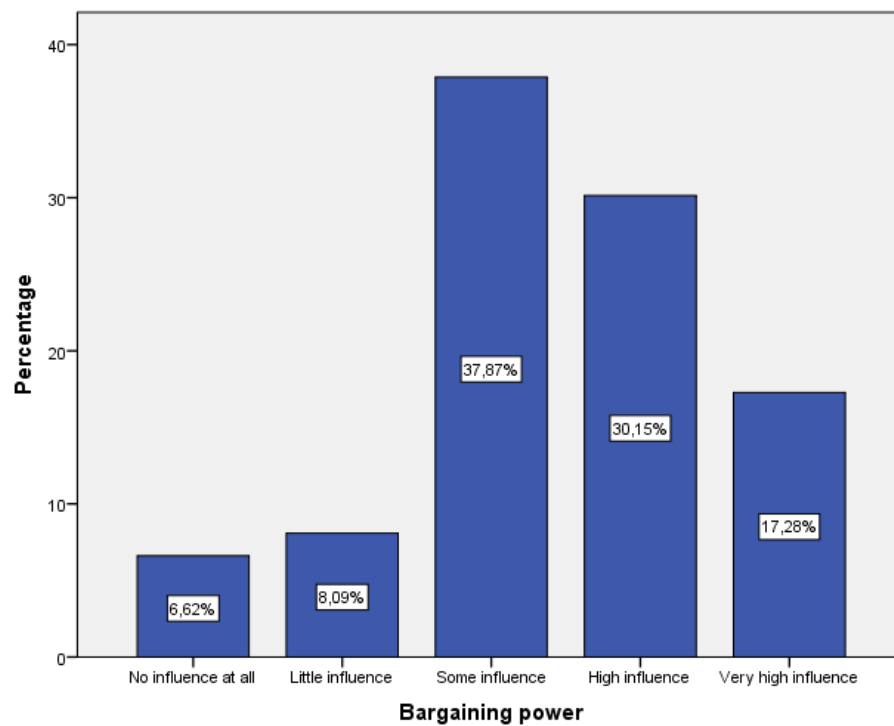


**Fig. 39 – Suppliers demand online purchasing.**

#### 4.2.31. Bargaining power

About 47% of respondents believe their companies have a high or very high bargaining power. Around 38% believe to have some bargaining power and the rest have low or no bargaining power.

There seems to be a tendency in these SME's to believe they have a higher bargaining power than would be (by common sense) expectable.



**Fig. 40 – Bargaing power.**

### 4.3. Reliability of the instrument

In order to assess the reliability of the questionnaire as an instrument for this study, Cronbach's alpha ( $\alpha$ ) was calculated. The reliability estimation by the Cronbach's alfa is the most used measure of the reliability of an instrument and it varies from 0 to 1 (Maroco & Marques, 2006).

The reliability of an instrument is associated to its consistency and the ability for it to be used in different contexts, i.e., if the items that constitute the test can be considered a random sample from a larger universe (Malhotra, 2007).

The Cronbach's alpha test was done to all variables in the conceptual TOE Framework except for the variables that had been decided to be excluded from the analysis ("IT skills" and "Types of technologies" for being constants due to sampling constraints). A 0,7 alpha value is acceptable for indicating a satisfactory internal consistency (Malhotra, 2007). A moderate to high reliability is found if the  $\alpha$  is in the interval 0,8 to 0,9 (Murphy & Davidsholder, 1988, p. 89 apud Maroco & Marques, 2006) .

Therefore, the obtained value of  $\alpha = 0,794$  is within the boundaries of acceptability. Therefore, there is evidence that the instrument is reliable enough to carry on the study with conviction.

**Table 10 – Cronbach's Alpha**

Source: SPSS output

Cronbach's Alpha	N of items
,794	29

## **4.4. Correlations**

### **4.4.1. Spearman's Rho**

To determine the linear relationship between two variables that are normally distributed, the Pearson's coefficient is used (Cramer & Howitt, 2004, p.38). However, the variables in this study are ordinal, so there was the necessity to use another test such as the Spearman's Rho rank of correlation. It is a non-parametric test, usable in samples which are not normally distributed. Its value varies between -1 and 1, attesting for the relationship, strength and direction between variables. The closer the Rho is to  $\pm 1$ , the stronger the relationship, while the positive or negative sign mean that variables vary in the same direction or opposite directions respectively (Maroco, 2003).

Rho intervals to be considered are adapted from Cohen's standard (1988):

- .10 to .29 - Small association;
- .30 and .49 - Medium association
- .50 to 1.0 - Large associate or relationship

The null hypothesis is:

H0: "There is no association between variables A and B".

#### 4.4.2. “Frequency of online purchasing” as independent variable: Spearman’s Rho

**Table 11 – “Frequency of online purchasing” correlations**

Source: SPSS output

Variable	<i>p</i> value	Rho	Result		
			Result	Association	Relation
Priority given to the knowledge and usage of IT	0,021	0,140	Reject Ho	Small	Positive
Easiness of online purchasing	0,000	0,219	Reject Ho	Small	Positive
Automatic connection to a supplier for purchasing	0,000	0,267	Reject Ho	Small	Positive
Willingness to use suppliers online store	0,000	0,413	Reject Ho	Medium	Positive
Having informatics security systems	0,028	0,133	Reject Ho	Small	Positive
Importance given to informatics security systems	0,328	0,06	Do not reject Ho	-	-
Employees had IT training during the last three years	0,006	0,167	Reject Ho	Small	Positive
Influence of IT training on IT skills	0,094	0,102	Do not reject Ho	-	-
Email as the main form of business communication	0,006	0,165	Reject Ho	Small	Positive
Priority given to the use of email	0,002	0,191	Reject Ho	Small	Positive
Online purchasing experience having impact in the relationship with suppliers	0,000	0,348	Reject Ho	Medium	Positive
Kind of impact of online purchasing has or would have in the relationship with suppliers	0,000	0,406	Reject Ho	Medium	Positive
Having added cost for buying online	0,000	-0,688	Reject Ho	Large	Negative
Acceptability of the cost of buying online in relation to the benefits	0,000	0,353	Reject Ho	Medium	Positive
Internal processes tend to remain the same through the years	0,152	-0,087	Do not reject Ho	-	-

More companies would buy online if purchasing processes would not change significantly	0,000	0,222	Reject Ho	Small	Positive
Top management of your company has a clear position regarding online purchasing	0,000	0,366	Reject Ho	Medium	Positive
Position the top managers of the company have regarding online purchasing	0,000	0,498	Reject Ho	Medium	Positive
Procedure flexibility with trusted suppliers	0,229	0,073	Do not reject Ho	-	-
Willingness to buy online from trusted suppliers	0,000	0,278	Reject Ho	Small	Positive
Awareness of suppliers' e-readiness to sell	0,001	0,198	Reject Ho	Small	Positive
Having special benefits for purchasing online	0,000	0,407	Reject Ho	Medium	Positive
Influence of special benefits for purchasing online	0,000	0,316	Reject Ho	Medium	Positive
Suppliers suggest that company should buy through their online channel	0,000	0,296	Reject Ho	Medium	Positive
Influence of suppliers' suggestions in online purchasing habits	0,000	0,352	Reject Ho	Medium	Positive
Suppliers demand company to buy online	0,000	0,299	Reject Ho	Medium	Positive
Bargaining power	0,032	0,130	Reject Ho	Small	Positive
Company size	0,985		Do not reject Ho	-	-

As can be seen in the Table 11, from all the TOE factors, there is evidence of medium and large correlation between “Frequency of Online Purchasing” and the following TOE variables:

i. Technological:

• **Technological integration:**

- Willingness to use suppliers online store: medium

The Spearman's Rho has confirmed the positive and relevant relationship between the online purchasing habits and the willingness to use the supplier's online store. Since the main mean of online purchasing is the supplier's online store. If the fact that around

65% of respondents (both online purchasers and non-purchasers) is taken into account (see 4.2.8), this result reinforces the supposition that there is a positive attitude of SMEs towards online purchasing.

ii. Organizational:

- **Perceived benefits of e-purchasing:**

- Online purchasing experience having impact in the relationship with suppliers: medium
- Kind of impact of online purchasing has or would have in the relationship with suppliers: medium

Both variables are related to impact in the relationship with suppliers. The fact of online purchasing having impact on relationship alone is interesting since from the descriptive statistics (see 4.2.15) the only conclusion that could be drawn was that a lot of companies find the impact “neutral”. Looking at the variable “Kind of impact” and relating it to the frequency of online purchasing confirms that a positive impact and frequency of online purchasing vary in the same direction. Moreover, there is huge potential for the around 44% that find the impact to be neutral (see 4.2.16.) to become more enthusiastic and so increase their online purchasing habits. It is therefore the suppliers’ responsibility for making it happen.

- **Perceived obstacles:**

- Costs:
  - Having added cost for buying online: large and negative relationship;

A negative correlation was expected. However, this has shown to be the strongest correlation in this exploratory study. High sensitivity to costs is therefore a very relevant aspect which confirms it was a good decision to use and formulate this variable the way it is formulated.



In a business oriented perspective, if the supplier can show the buyer he has no added costs, the potential for increasing online purchasing frequency is very large (assuming causality which is not provided by the test).

- Acceptability of the cost of buying online in relation to the benefits: medium relationship;

This result was expected and has been validated. It is tightly related to the previous variable although the correlation is not as strong. About 53% of respondents had shown that costs were fairly acceptable or totally acceptable (see 4.2.18.) and 87% at least accepted these costs (see 4.2.18.). This reinforces the importance that the perception of cost VS benefit has on the buyer's inclination towards e-purchasing.

- **Top management support:**

- Top management of the company has a clear position regarding online purchasing- medium;
- Position the top managers of the company have regarding online purchasing – medium;

These results (although not causal) help confirm the role of the company's top management in the online purchasing habits.

From a business perspective, if a supplier wants to push his online channel, he should invest effort in shaping the top managers opinion regarding online purchasing.

iii. Environmental

- **Pressure from trading partners**

- **Pressure from trading partner's benefits**
  - Having special benefits for purchasing online: medium;
  - Influence of special benefits for purchasing online: medium;

In Business-to-consumer relationships, giving buyers special benefits (such as points, special discounts, vouchers, etc.) is current practice. Therefore, the results obtained that there is a relevant relationship in the SMEs case between having special benefits and the

frequency of online purchasing, indicate that the decision of introducing this variable in the TOE framework was correct.

From a business perspective and assuming a causal relationship, suppliers should define and implement incentives to buyers, making them perceive them as special benefits.

- **Persuasion from trading partner's sales channels:**
  - Suppliers suggest that company should buy through their online channel: medium relationship;
  - Influence of suppliers' suggestions in online purchasing habits: medium relationship;

The relationships validated for these variables validate the importance of the role of suppliers. These are variables foccused on the relational side of business activities between seller and supplier. It shows that suppliers' efforts to push their online channel have a relevant positive relationship with the buyers' online purchasing habits.

From a business point of view, assuming causality, suppliers should engage their sales channels in promoting the online channel.

- **Demand from key trading partners:** medium;

Although also a “relational” variable, this is also a “power” related variable, introduced by the author of this thesis based on the literature review, showing a relevant relationship between the will of key suppliers and the online purchasing behavior of the companies. Assuming a causal relationship, from a business point of view, key suppliers have a certain amount of power over buyers.

## **4.5. Analysis of sub-groups**

### **4.5.1. Oneway ANOVA**

The small and medium enterprises classification for this this thesis purpose goes from 1 employee to 249 employees. For this reason, studying subgroups of this wide group may prove interesting in checking whether their behaviors and group characteristics differ in relation to online purchasing. This was done in order to enrich the scope of this exploratory study.

A mechanism to achieve this is to do an ANOVA analysis of variance in which the comparisons of means of populations are done assuming one dependent variable (Oneway Anova) (Maroco, 2007). The analysis of variance has the advantage of “showing whether the means of three or more groups differ in some way although it does not tell us in which way those means differ” (Cramer & Howitt, 2004, p.6-8). For the application of the ANOVA, the dependent variable should be continuous (Maroco, 2007).

However the sample is big enough (as pointed in 3.6.) that the Law of Large numbers can be applied. Also, the Likert scale has a reasonable number of options (five), so it is usual in the literature to see the use of the ANOVA for these cases<sup>5</sup>.

Therefore, the One-way Anova test has been carried out for two possible subgroups:

- Case 1 (2 classes): 1 to 4; 5 to 249;
- Case 2 (3 classes): 1 to 4; 5 to 9; 10 to 249;

No case was defined including the group of medium companies (50 to 249 employees) since for this group there were only 26 respondents which as a rule of thumb currently found in the literature (at least 30) is not sufficient.

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1. A Kruskal–Wallis one-way analysis of variance has also been done but general conclusions have not been affected.

The main purpose of carrying out this Oneway ANOVA is to understand whether there are characteristics which are specific to sub-groups of the SME sample. Anticipating the possibility and plausibility of this happening, in the questionnaire design, there was a subdivision of the group of Micro companies (1 to 9 employees) in two (1 to 4 and 4 to 9 employees). Empirically it seemed plausible to assume that in smaller micro companies, the owner performs all types of tasks which in bigger micro companies those functions, namely, purchasing, are probably distributed to other employees also.

To apply the Oneway ANOVA, the following steps were followed (Cramer & Howitt, 2004, p.6-8):

- The Levine's test was done to test the homogeneity of variance among groups (necessary condition for ANOVA). The null hypothesis being:

H0: Variance among groups is the same. If the null hypothesis is verified, the condition for homogeneity is verified.

- If the condition for homogeneity is verified in the Levene's test, Anova is done. The null hypothesis being:

H0: There is no evidence of differences in the means among groups.

#### 4.5.2. Oneway ANOVA: Case 1

**Table 12 – Oneway ANOVA for case 1.**

Variable	Levene		ANOVA	
	p value	Result	$\sigma$ value	Result
Frequency of online purchasing	0,253	Do not reject Ho.	0,488	Do not reject Ho.
If company purchases online	0,001	Reject Ho.	-	-
Priority given to the knowledge and usage of IT	0,426	Do not reject Ho.	0,226	Do not reject Ho.

Easiness of online purchasing	0,495	Do not reject Ho.	0,628	Do not reject Ho.
Automatic connection to a supplier for purchasing	0,003	Reject Ho.	-	-
Willingness to use suppliers online store	0,972	Do not reject Ho.	0,299	Do not reject Ho.
Having informatics security systems	0,002	Reject Ho.	-	-
Importance given to informatics security systems	0,729	Do not reject Ho.	0,535	Do not reject Ho.
Employees had IT training during the last three years	0,000	Reject Ho.	-	-
Influence of IT training on IT skills	0,162	Do not reject Ho.	0,392	Do not reject Ho.
Email as the main form of business communication	0,000	Reject Ho.	-	-
Priority given to the use of email	0,400	Do not reject Ho.	0,190	Do not reject Ho.
Online purchasing experience having impact in the relationship with suppliers	0,756	Do not reject Ho.	0,331	Do not reject Ho.
Kind of impact of online purchasing has or would have in the relationship with suppliers	0,554	Do not reject Ho.	0,923	Do not reject Ho.
Having added cost for buying online	0,001	Reject Ho.	-	-
Acceptability of the cost of buying online in relation to the benefits	0,794	Do not reject Ho.	0,803	Do not reject Ho.
Internal processes tend to remain the same through the years	0,003	Reject Ho.	-	-

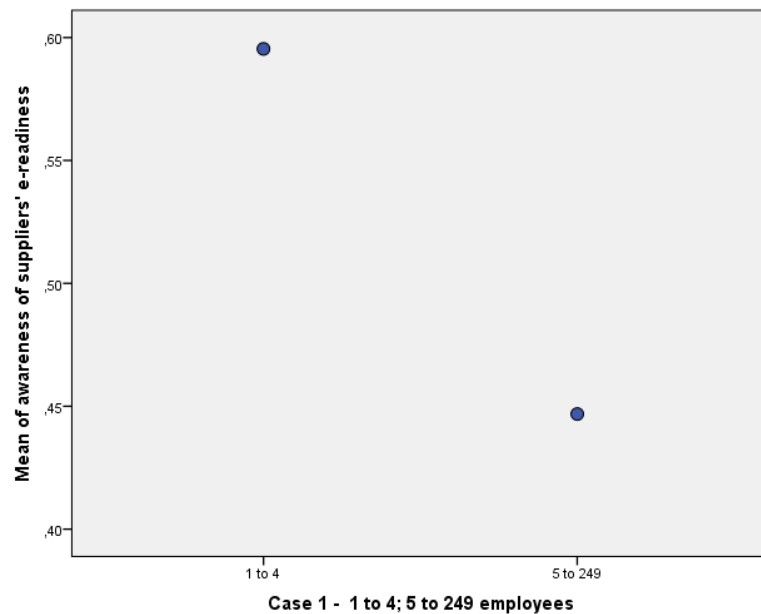
More companies would buy online if purchasing processes would not change significantly	0,507	Do not reject Ho.	0,577	Do not reject Ho.
Top management of your company has a clear position regarding online purchasing	0,036	Reject Ho.	-	-
Position the top managers of the company have regarding online purchasing	0,633	Do not reject Ho.	0,216	Do not reject Ho.
Procedure flexibility with trusted suppliers	0,421	Do not reject Ho.	0,687	Do not reject Ho.
Willingness to buy online from trusted suppliers	0,894	Do not reject Ho.	0,816	Do not reject Ho.
Awareness of suppliers' e-readiness to sell	0,172	Do not reject Ho.	0,014	Reject Ho.
Having special benefits for purchasing online	0,005	Reject Ho.	-	-
Influence of special benefits for purchasing online	0,216	Do not reject Ho.	0,805	Do not reject Ho.
Suppliers suggest that company should buy through their online channel	0,064	Do not reject Ho.	0,298	Do not reject Ho.
Influence of suppliers' suggestions in online purchasing habits	0,177	Do not reject Ho.	0,516	Do not reject Ho.
Suppliers demand company to buy online	0,232	Do not reject Ho.	0,549	Do not reject Ho.
Bargaining power	0,731	Do not reject Ho.	0,044	Reject Ho.

For the variables “Automatic connection to a supplier for purchasing”, “Having informatics security systems”, “Email as the main form of business communication”, “Having added cost for buying online”, “Internal processes tend to remain the same through the years”, Top management of your company has a clear position regarding online purchasing”, “Having special benefits for purchasing online”, the condition of homogeneity is not satisfied. So, no analysis of means was possible for these.

On the other hand, there were differences between groups for the following variables:

- Awareness of suppliers’ e-readiness to sell online:

The mean is superior for group 1 (1 to 4 employees). One possible cause for that fact is that small companies tend to have fewer suppliers and so the relationship with them is more “personal”. Therefore, smaller companies may have a more detailed knowledge of each supplier’s attributes.

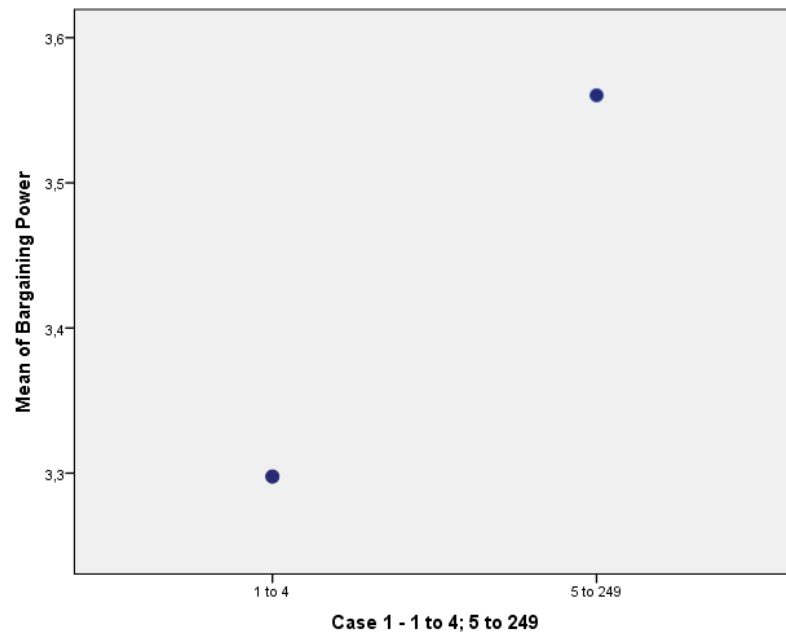


**Fig. 41 – Means for awareness of suppliers’ e-readiness in case 1**

Source: SPSS output.

- Bargaining power:

This result is not unexpected. From commonsense, it is reasonable that bigger companies have more bargaining power than small ones.



**Fig. 42 – Means for bargaining power in case 1**

Source: SPSS output.

For the rest of the variables, there was no evidence of relevant differences between means.



### 4.5.3. Oneway ANOVA: Case 2

**Table 13 - Oneway ANOVA for case 2.**

Variable	Levene		ANOVA	
	p value	Result	$\sigma$ value	Result
Frequency of online purchasing	0,595	Do not reject Ho.	0,849	Do not reject Ho.
If company purchases online	0,007	Reject Ho.	-	-
Priority given to the knowledge and usage of IT	0,694	Do not reject Ho.	0,602	Do not reject Ho.
Easiness of online purchasing	0,707	Do not reject Ho.	0,849	Do not reject Ho.
Automatic connection to a supplier for purchasing	0,003	Reject Ho.	-	-
Willingness to use suppliers online store	0,971	Do not reject Ho.	0,19	Do not reject Ho.
Having informatics security systems	0,000	Reject Ho.	-	-
Importance given to informatics security systems	0,016	Reject Ho.	-	-
Employees had IT training during the last three years	0,000	Reject Ho.	-	-
Influence of IT training on IT skills	0,204	Do not reject Ho.	0,377	Do not reject Ho.
Email as the main form of business communication	0,000	Reject Ho.	-	-
Priority given to the use of email	0,361	Do not reject Ho.	0,301	Do not reject Ho.

Online purchasing experience having impact in the relationship with suppliers	0,839	Do not reject Ho.	0,379	Do not reject Ho.
Kind of impact of online purchasing has or would have in the relationship with suppliers	0,343	Do not reject Ho.	0,961	Do not reject Ho.
Having added cost for buying online	0,011	Reject Ho.	-	-
Acceptability of the cost of buying online in relation to the benefits	0,161	Do not reject Ho.	0,600	Do not reject Ho.
Internal processes tend to remain the same through the years	0,000	Reject Ho.	-	-
More companies would buy online if purchasing processes would not change significantly	0,741	Do not reject Ho.	0,485	Do not reject Ho.
Top management of your company has a clear position regarding online purchasing	0,03	Reject Ho.	-	-
Position the top managers of the company have regarding online purchasing	0,801	Do not reject Ho.	0,620	Do not reject Ho.
Process flexibility with trusted suppliers	0,000	Reject Ho.	-	-
Willingness to buy online from trusted suppliers	0,756	Do not reject Ho.	0,454	Do not reject Ho.
Awareness of suppliers' e-readiness to sell	0,774	Do not reject Ho.	0,031	Reject Ho.
Having special benefits for purchasing online	0,000	Reject Ho.	-	-
Influence of special benefits for purchasing online	0,438	Do not reject Ho.	0,906	Do not reject Ho.
Suppliers suggest that company should buy through their online channel	0,159	Do not reject Ho.	0,526	Do not reject Ho.

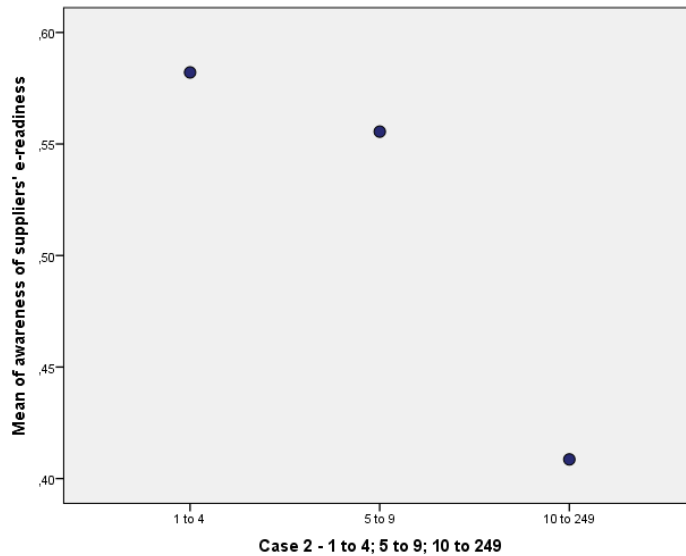
Influence of suppliers' suggestions in online purchasing habits	0,112	Do not reject Ho.	0,752	Do not reject Ho.
Suppliers demand company to buy online	0,000	Reject Ho.	-	-
Bargaining power	0,552	Do not reject Ho.	0,049	Reject Ho.

For the variables “Automatic connection to a supplier for purchasing”, “Having informatics security systems”, “Importance given to informatics security systems”, “Employees had IT training during the last three years”, “Email as the main form of business communication”, “Having added cost for buying online”, “Internal processes tend to remain the same through the years”, “Top management of your company has a clear position regarding online purchasing”, “Process flexibility with trusted suppliers”, “Having special benefits for purchasing online”, “Suppliers demand company to buy online”, “If company purchases online”, the condition of homogeneity is not satisfied. So, no analysis of means was possible for these.

There were differences between groups for the following variables:

- Awareness of suppliers' e-readiness to sell online:

The mean is superior for groups 1 (1 to 4 employees) and 2 (5 to 9 employees) and its value descends as company size increases. The possible reasons for that are the same as written for case 1.

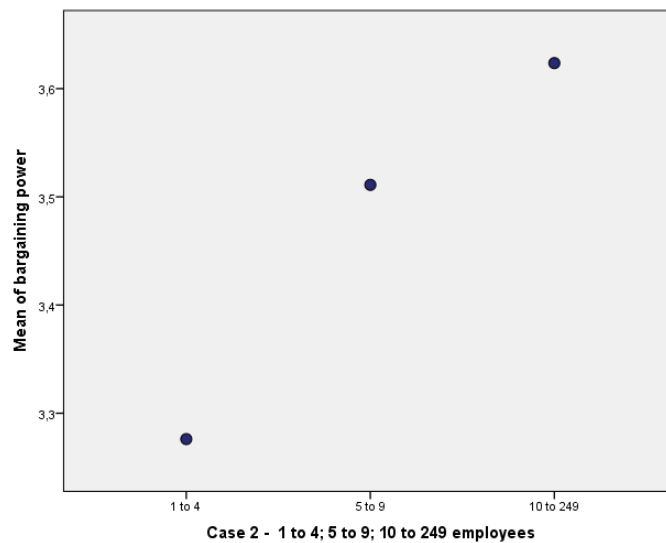


**Fig. 43 – Means for awareness of supplier's e-readiness for case 2**

Source: SPSS output.

- Bargaining power:

Similarly to what happens for case 1, it is reasonable to expect that bigger companies have more bargaining power than small ones.



**Fig. 44 – Means for bargaining power for case 2**

Source: SPSS output.

For the rest of the variables, there was no evidence of relevant differences between means.

## V. Conclusions

As technology use is booming in the business world, this thesis covers a very relevant theme at the present moment, the online purchasing drivers for SMEs.

The defined purpose was to identify the B2B e-purchasing usage determinants of Portuguese small and medium sized enterprises (SMEs) and it has been accomplished.

In general, it was observed that a lot of SMEs in Portugal are connected to the internet and have a generalized access both to software and hardware. The boom of the smartphones, social media and internet access has certainly contributed to that.

It was observed that the majority of respondents had purchased online at least once during the last year (around 74%) and they purchased several types of products in similar proportions. This shows that there is no discrimination for product types. The main mean of online purchasing used by these companies was the supplier's online store (around 60% bought that way). Email is the most prioritized form of business communication. About 79% of respondents, almost always or always prioritize the use of email over other forms of communication. Around 53% find the relation of costs vs benefits of purchasing online is acceptable or totally acceptable. The majority of top managers (about 60%) are slightly or totally in favor of online purchasing. Special benefits for buying online are valued by the respondents as around 61% admitted that having special benefits made or would make them buy more frequently online while around 42% admit that suggestions from suppliers to buy online have or would have influenced them into buying more online. In sum, according to the sample used, Portuguese SMEs showed they are ready to purchase online.

The TOE framework has proved to be a useful tool for this investigation and it has provided structure and facilitated the analysis of results. Results show relevant relationships between the online purchasing habits of SMEs and variables related to the willingness to purchase online, perceived benefits for purchasing online, perceived

costs, top management support and pressure from trading partners through suggestions, attribution of special benefits and the demand to use their online sales channel.

The Spearman's Rho rank correlation has shown that there is a positive relationship between the willingness to use a supplier's online store and the online purchasing frequency of SMEs. It has also been found that the more positive the impact of online purchasing in the relationship with the supplier, the higher the frequency of online purchasing by companies. Perceived added costs for purchasing online have a negative and large relationship with online purchasing frequency while acceptability of those costs in relation to the perceived benefits of purchasing online has a positive medium relationship with online purchasing frequency. It has been validated that the position of top managers regarding online purchasing has a positive medium relationship with the online purchasing frequency. Pressure from trading partners both through the forms of giving costumers special benefits for buying online and suggesting them that they should buy online have also relevant relationships with online purchasing frequency. It has also been found that online purchasing frequency is positively related to demand to buy online from key suppliers.

The Spearman's Rho rank correlation does not indicate causalty in the relationships it evaluates. However, from a business perspective, and by analyzing the factors that are being correlated it is reasonable to assume causality and hence derive conclusions for business strategies to be designed and applied to increase online sales.

For further investigation, the author would like to suggest two types of studies, one having a deeper theoretical nature, such as the design of an econometric model for the online purchasing drivers of SMEs and other of a more practical nature which would be the application of the conceptual TOE model designed for this thesis to a real case of a company which intends to more successfully push its online sales channel.

Even though this constitutes an exploratory study, a model of analysis has been defined with variables which are not used in most of the literature. The study not only validated some determinants used by other authors, mainly in e-commerce studies by bringing them to the e-purchasing/e-procurement field, but also validated and highlighted the relevance of determinants that had not yet been extensively found in the literature,

demonstrating the utmost relevance of relationships between buyer and supplier as well as of perceived costs. The results obtained are therefore of high relevance and, although not representative of the whole universe, derive from a reasonable sized sample which has enabled the discovery of interesting facts.

This dissertation's findings represent a step forward in the field of e-purchasing by SMEs, not only academically but also for business purposes.



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## VII. Annexes

### ANNEX I – Questionnaire in Portuguese

#### Compras Online Pelas Empresas Portuguesas

Sou estudante da Faculdade de Economia do Porto (FEP) e desenhei este questionário para identificar os fatores que determinam a realização de compras eletrónicas pelas pequenas e médias empresas portuguesas aos seus fornecedores.

Ao responder a este questionário, em apenas 10 minutos, estará a dar um contributo precioso para a esta investigação.

O questionário deve ser respondido pela pessoa responsável por efetuar compras da empresa. Não há respostas certas ou erradas.

Peço-lhe que seja sincero e, em caso de dúvida, basta seguir a sua intuição.

Muito obrigado,  
Bruno Duarte  
(Aluno do Mestrado em Marketing da FEP, nr. 200400424)

\* Required

1. 1. Com que frequência a sua empresa fez compras online (via internet) durante o último ano (excluindo encomendas enviadas pessoalmente via email)? \*

*Mark only one oval.*

	1	2	3	4	5	
Nunca	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Sempre que possível

2. 2. Assinale que tipo de produtos comprou online. \*

*Check all that apply.*

- ☐ Material de escritório
- ☐ Matérias-primas
- ☐ Mobiliário de escritório/ decoração
- ☐ Equipamentos para produção (máquinas, consumíveis)
- ☐ Software (programas informáticos)
- ☐ Outro tipo de produtos
- ☐ A minha empresa não fez compras online em 2014



3. Assinale todas as tecnologias da informação e comunicação que a sua empresa utilizou durante o último ano. \*

*Check all that apply.*

- ☐ Computadores
- ☐ Tablets
- ☐ Smartphones
- ☐ E-mail
- ☐ Internet
- ☐ Media sociais (blogs, redes sociais, etc)

4. Indique que grau de prioridade a sua empresa atribui ao domínio da utilização das tecnologias anteriormente mencionadas? \*

*Mark only one oval.*

	1	2	3	4	5	
Não é prioridade	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Essencial (Prioridade máxima)

5. A sua empresa teve alguém cujas funções incluíssem alguma dedicação às tecnologias de informação e comunicação durante o último ano (por exemplo, enviar emails, gerir ficheiros, redes sociais, etc)? \*

*Mark only one oval.*

- ☐ Sim
- ☐ Não

6. A sua empresa usou algum destes meios para comprar online durante o último ano? Selecione a(s) opções que se aplicam à sua empresa. \*

*Check all that apply.*

- ☐ Loja online do fornecedor (via página online)
- ☐ Sistemas de software do fornecedor ligados ao sistema informático da empresa
- ☐ Ebay, amazon e outras plataformas de compras online
- ☐ Outro meio não listado
- ☐ A minha empresa não fez compras online

7. Qual o nível de dificuldade que teve ou que acha que teria em comprar online (via internet)? \*

*Mark only one oval.*

	1	2	3	4	5	
Muito difícil	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Muito fácil

8. Para fazer compras, os sistemas informáticos da sua empresa estiveram automaticamente ligados a algum sistema informático de um fornecedor durante o último ano? (Através de software específico ou VPN). \*

Mark only one oval.

- ☐ Sim
- ☐ Não

9. Qual a sua disposição para passar a utilizar uma loja em página online do fornecedor, acedendo com nome de utilizador e palavra-passe? \*

Mark only one oval.

	1	2	3	4	5	
Nada disposto a utilizar	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Muito disposto a utilizar

10. A sua empresa usou algum dos seguintes sistemas de segurança informáticos durante o último ano? Antivírus, firewall (física ou software), servidores seguros, cópias de segurança (físico ou em cloud/nuvem)? \*

Mark only one oval.

- ☐ Sim
- ☐ Não

11. Até que ponto concorda que os sistemas de segurança informáticos são indispensáveis hoje em dia? \*

Mark only one oval.

	1	2	3	4	5	
Discordo totalmente	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Concordo totalmente

12. A sua empresa proporcionou algum tipo de formação relacionada com informação e comunicação aos seus empregados nos últimos 3 anos? (informática, redes sociais e media sociais, etc) \*

Mark only one oval.

- ☐ Sim
- ☐ Não

13. Classifique a influência que uma formação específica em tecnologias de informação e comunicação teve ou teria na melhoria das competências informáticas das pessoas da sua empresa (informática, redes sociais e media sociais, etc). \*

Mark only one oval.

	1	2	3	4	5	
Nenhuma influência	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Muita influência

14. Para a sua empresa, a correspondência eletrônica (email) foi o meio principal de comunicação de negócios nos últimos 5 anos? \*

Mark only one oval.

- ☐ Sim  
☐ Não

15. Com que frequência a sua empresa dá prioridade ao uso da correspondência eletrônica (email) em relação aos outros meios de comunicação? (Por exemplo fax, telefone fixo ou telemóvel.) \*

Mark only one oval.

	1	2	3	4	5	
Nunca	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Sempre

16. Considera que a experiência de efetuar compras online durante o último ano teve ou teria algum impacto na relação com os seus fornecedores? \*

Mark only one oval.

- ☐ Sim  
☐ Não

17. Qual o tipo de impacto que acha que a compra online tem ou teria na relação com os seus fornecedores? \*

Mark only one oval.

	1	2	3	4	5	
Muito negativo	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Muito positivo

18. Algum dos meios que a sua empresa usou para fazer compras online durante o último ano teve um custo acrescido para a empresa? \*

Mark only one oval.

- ☐ Sim  
☐ Não  
☐ A minha empresa não fez compras online no último ano

19. Como classificaria os custos relativamente aos benefícios de comprar online? \*

Mark only one oval.

	1	2	3	4	5	
Totalmente inaceitáveis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Totalmente aceitáveis

20. Na sua empresa, os processos internos tendem a ser sempre os mesmos ao longo dos anos, ou seja, raramente mudam? \*

Mark only one oval.

- ☐ Sim
- ☐ Não

21. Se a alteração ao processo de compra fosse pequena, haveria mais empresas a comprar online. \*

Mark only one oval.

	1	2	3	4	5	
Discordo totalmente	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Concordo totalmente

22. A gestão de topo da sua empresa tem uma posição clara (favorável ou não favorável) relativamente às compras online (via internet)? \*

Mark only one oval.

- ☐ Sim
- ☐ Não

23. Como supõe ser a posição/opinião da gestão de topo da sua empresa relativamente às compras online? \*

Mark only one oval.

	1	2	3	4	5	
Opõe-se totalmente	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	É completamente a favor

24. A minha empresa tem mais flexibilidade a nível de procedimentos com parceiros de negócio em quem confia muito. \*

Mark only one oval.

- ☐ Sim
- ☐ Não

25. Classifique a influência que a confiança no fornecedor tem ou teria na abertura da sua empresa para comprar pelo canal online do fornecedor. \*

Mark only one oval.

	1	2	3	4	5	
Não tem/não teria influência alguma	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Tem/teria muita influência

26. Sabe se cada um dos principais fornecedores da sua empresa vende através de canal online (via internet)? \*

Mark only one oval.

- ☐ Sim  
☐ Não

27. Os seus fornecedores dão-lhe benefícios especiais caso a sua empresa lhes faça compras através dos seus canais de vendas online? Por exemplo, descontos e ofertas especiais, melhores condições de pagamento, lista de compras personalizada (lista de favoritos). \*

Mark only one oval.

- ☐ Sim  
☐ Não

28. Até que ponto esses benefícios fazem ou fariam a sua empresa comprar mais online? \*

Mark only one oval.

	1	2	3	4	5	
Não tem influência alguma	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Têm muita influência

29. Os seus fornecedores sugerem que a sua empresa use também os canais de venda online que disponibilizam? (Por exemplo, por sugestão do vendedor que visita a sua empresa, do serviço de clientes, etc). \*

Mark only one oval.

- ☐ Sim  
☐ Não

30. Classifique a influência que essas sugestões têm ou teriam nos hábitos de compra online pela sua empresa. \*

Mark only one oval.

	1	2	3	4	5	
Não tem influência alguma	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Tem muita influência

31. Algum dos principais fornecedores da sua empresa, com canal de venda online, requer que a sua empresa faça necessariamente as compras por esse canal? \*

Mark only one oval.

- ☐ Sim  
☐ Não

32. Como classifica a influência que a sua empresa tem nos preços e condições de pagamento na relação com os seus principais fornecedores? \*

Mark only one oval.

	1	2	3	4	5	
Nenhuma influência	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Muita influência

33. Em que sector opera a sua empresa? \*

Mark only one oval.

- ☐ Agricultura, Produção animal, Pesca, Caça, Florestal
- ☐ Indústria transformadora
- ☐ Comércio por grosso e retalho
- ☐ Alojamento e Restauração
- ☐ Informação e Comunicação
- ☐ Financeira / Seguradora
- ☐ Serviços
- ☐ Imobiliária
- ☐ Consultoria, Científica
- ☐ Administrativa
- ☐ Saúde
- ☐ Artística / Desportiva
- ☐ Construção Civil

**34. Indique por favor a localização da sede da sua empresa \***

*Mark only one oval.*

- ☐ Viana do Castelo
- ☐ Braga
- ☐ Vila Real
- ☐ Bragança
- ☐ Porto
- ☐ Aveiro
- ☐ Viseu
- ☐ Guarda
- ☐ Coimbra
- ☐ Castelo Branco
- ☐ Leiria
- ☐ Lisboa
- ☐ Santarém
- ☐ Portalegre
- ☐ Setúbal
- ☐ Évora
- ☐ Beja
- ☐ Madeira
- ☐ Açores

**35. Quantos colaboradores tem a sua empresa? \***

*Mark only one oval.*

- ☐ 1 a 4
- ☐ 5 a 9
- ☐ 10 a 49
- ☐ 50 a 249

**36. Gostaria de receber os resultados desta investigação? Se sim, por favor coloque abaixo o seu endereço de email.**

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**37. Tem algum comentário ou sugestão relativamente a este questionário no geral ou alguma(s) pergunta(s) em particular?**

Obrigado.

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## ANNEX II – Questionnaire in English

### Online purchasing by Portuguese SME's

\* Required

1. How often has your company purchased online (via internet) during the last year? (Excluding manually typed e-mails) \*

Mark only one oval.

	1	2	3	4	5	
Never	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Whenever possible

2. Tick the kinds of products your company has purchased online. \*

Check all that apply.

- ☐ Office supplies
- ☐ Raw materials
- ☐ Office furniture
- ☐ Equipments for production (machinery, consumables)
- ☐ Software
- ☐ Other kinds of products
- ☐ My company has not made online purchases during the last year

3. Tick the kinds of information and communication technologies your company has been using for the last year. \*

Check all that apply.

- ☐ Computers
- ☐ Tablets
- ☐ Smartphones
- ☐ E-mail
- ☐ Internet
- ☐ Social media (blogs, social networks, etc)

4. For your company, indicate how it prioritizes the knowledge and usage of those technologies. \*

Mark only one oval.

	1	2	3	4	5	
Not a priority	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Essential (Maximum priority)



5. Did your company have any worker whose duties included information and communication (sending emails, managing electronic files, social media, etc.) during the last year? \*

Mark only one oval.

- ☐ Yes  
☐ No

6. Has your company used any of these means to purchase online during the last year? (Select the option(s) which apply to your company). \*

Check all that apply.

- ☐ Supplier's online store  
☐ Ebay, Amazon and other online purchasing platforms  
☐ Other medium  
☐ My company has not purchased online during the last year

7. How difficult do you find or would find it to buy online? \*

Mark only one oval.

	1	2	3	4	5	
Very difficult	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very easy

8. Has your company been automatically connected to a supplier for purchasing/ buying during the last year? (Through specific software or VPN). \*

Mark only one oval.

- ☐ Yes  
☐ No

9. How willing are you to use a supplier's online store using a username and password? \*

Mark only one oval.

	1	2	3	4	5	
Not willing at all	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very willing

10. Has your company used any of the following systems of information security during the last year? Antivirus, firewall (physical or software), secured servers, backups (physical or cloud based)? \*

Mark only one oval.

- ☐ Yes  
☐ No

11. To what extent do you agree that information/informatics security systems are indispensable nowadays? \*

Mark only one oval.

	1	2	3	4	5	
Totally disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Totally agree

12. Has your company provided its employees with some type of IT training during the last three years? (Software, social media, etc.) \*

Mark only one oval.

- ☐ Yes  
☐ No

13. Classify the influence that training programs related to computers /informatics had or would have on the IT skills of your company's staff. \*

Mark only one oval.

	1	2	3	4	5	
No influence at all	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very strong influence

14. Has electronic correspondence (email) become the main form of business communication for your company? \*

Mark only one oval.

- ☐ Yes  
☐ No

15. How often does your company prioritize the use of e-mail over other forms of business communication (ex: fax, telephone)? \*

Mark only one oval.

	1	2	3	4	5	
Never	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Always

16. Do you think the online purchasing experience (during the last year) had or would have some kind of impact in the relationship with your suppliers? \*

Mark only one oval.

- ☐ Yes  
☐ No

17. What kind of impact do you think online purchasing has or would have in the relationship with your suppliers? \*

Mark only one oval.

	1	2	3	4	5	
Very negative	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very positive

18. Did any mean used by your company to buy online during the last year imply an added cost to your company? \*

Mark only one oval.

- ☐ Yes  
☐ No  
☐ My company has not purchased online during the last year

19. How would you classify the acceptability of the cost of buying online in relation to the benefits of buying online? \*

Mark only one oval.

	1	2	3	4	5	
Totally unacceptable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Totally acceptable

20. At your company, do internal procedures tend to remain the same through the years? \*

Mark only one oval.

☐ Yes

☐ No

21. More companies would buy online if purchasing procedures would not change significantly. \*

Mark only one oval.

	1	2	3	4	5	
Totally disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Totally agree

22. The top management of your company has a clear position regarding online purchasing (whether favorable or unfavorable). \*

Mark only one oval.

☐ Yes

☐ No

23. What position do you think the top managers of your company have regarding online purchasing? \*

Mark only one oval.

	1	2	3	4	5	
Strongly oppose	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly in favor

24. My company is more flexible regarding procedures when dealing with highly trusted business partners. \*

Mark only one oval.

☐ Yes

☐ No

25. How does trust in the trading partner influence or would influence your pre-disposition to buy through their online channel? \*

Mark only one oval.

	1	2	3	4	5	
No influence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very high influence

26. Do you know if each one of your main suppliers sells their products or services through an online channel? \*

Mark only one oval.

- ☐ Yes  
☐ No

27. Do your suppliers provide your company with special benefits if you buy from them online? (Such as discounts, special offers, better paying conditions, personalized shopping list, etc) \*

Mark only one oval.

- ☐ Yes  
☐ No

28. Up to what point these benefits make/ would make your company buy more online? \*

Mark only one oval.

	1	2	3	4	5	
No influence at all	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very high influence

29. Do your suppliers suggest that your company should also buy through their online channel? (Through the sales representative that visits your company, through the customer service, etc.) \*

Mark only one oval.

- ☐ Yes  
☐ No

30. How much do these suggestions do/ would positively influence your company's online purchasing habits? \*

Mark only one oval.

	1	2	3	4	5	
No influence at all	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very high influence

31. Does any of your company's main suppliers require that you exclusively buy from them through their online channel? \*

Mark only one oval.

- ☐ Yes  
☐ No

32. How would you rank the influence your company has on purchasing prices and payment terms in the relationship with its main suppliers? \*

Mark only one oval.

	1	2	3	4	5	
No influence at all	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very high influence

**33. In which sector does your company operate? \***

*Mark only one oval.*

- ☐ Agriculture, Livestock, Fishery, Hunting, Forestry
- ☐ Manufacturing
- ☐ Gross and retail commerce
- ☐ Hotels and Restaurants
- ☐ Information and Communication
- ☐ Finance / Insurance
- ☐ Services
- ☐ Real estate
- ☐ Consulting/ Scientific
- ☐ Administrative
- ☐ Health care
- ☐ Artistic / Sports
- ☐ Construction

**34. Please indicate the location of your company \***

*Mark only one oval.*

- ☐ Viana do Castelo
- ☐ Braga
- ☐ Vila Real
- ☐ Bragança
- ☐ Porto
- ☐ Aveiro
- ☐ Viseu
- ☐ Guarda
- ☐ Coimbra
- ☐ Castelo Branco
- ☐ Leiria
- ☐ Lisboa
- ☐ Santarém
- ☐ Portalegre
- ☐ Setúbal
- ☐ Évora
- ☐ Beja
- ☐ Madeira
- ☐ Açores

35. How many employees does your company have? \*

*Mark only one oval.*

- ☐ 1 to 4
- ☐ 5 to 9
- ☐ 10 to 49
- ☐ 50 to 249

36. Would you like to receive the results of this investigation? If so, please type your email in the answering box.

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37. Do you have any comments or suggestions related to this questionnaire or any question(s) in particular? Please feel free to share your feedback.

Thank you.

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